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THE FUTURE OF SOUND

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welcome

The fourth and penultimate instalment in our series of *Beginners' guides* cover features sees us taking on that most venerable of grand old computer music dames: MIDI.

Despite being almost 30 years old and decidedly low-tech in terms of specifications, the MIDI protocol is an integral feature of the music software landscape and as essential today as ever. It's the language our keyboards use to tell our virtual synths and samplers what notes to play; it's the connection between our hardware control surfaces and the knobs and faders on our plug-in effects and DAW mixers; it's powerful, universal, highly manipulable and endlessly versatile, and our world would be a very different place without it.

If you're new to music making, then, *The Beginners' guide to MIDI* (p24) gives you all the information and walkthroughs you need to get started and grow confident with the concepts and practices involved in MIDI recording, programming and processing. And if you're an experienced digital musician, don't feel you should just skip it – it could serve as a useful refresher, and you might even learn something new.

ENJOY THE ISSUE...

Ronan Macdonald Editor



The cm Mission Our goal is to help you create great music with your PC or Mac. With that objective always in mind, we bring you step-by-step tutorials on all aspects of software-based music production, unbiased reviews of the latest products, technical Q&As, and a Dual Layer DVD-ROM packed with exclusive software and samples.

SUBSCRIBE AND SAVE! SEE P19

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BEGINNERS'
GUIDE TO

MIDI AND SEQUENCING

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If you're a rookie, check out the **CM Beginners** folder on the DVD - a library of material put together to help you get your head around many basic computer music concepts

cm/inbox



Waxing lyrical on matters computer musical – email cminbox@futurenet.co.uk

Message of the month

A few years ago, I stumbled upon Reason 3 and knew I wanted to create my own music – not to make it in the business, but more as a way to express myself. I know my way around with wires and routing, so I thought it would be easy.

To a certain extent, I was right. Until I started to check out YouTube! Boy, was I wrong. I thought I had it figured out, but this guy, Optronics, had made some excellent tutorials that blew my mind.

Then I noticed some other dude, Hydride24! This guy knows more about Reason than the developers themselves. Again, I learned so much – not just about Reason, but also how to make my favourite genre: trance.

Although Reason is perfect, the only flaw is in incorporating vocals or tracks. I switched to Ableton Live.

So, back to YouTube in search of Ableton tutorials. Let me tell you, there are plenty of them around and some are just perfect.

Besides this magazine for getting started, I've found YouTube pretty awesome. In **cm120**, you had a Darren Tate video, which I watch from time to time, just to get the feeling I had the first time I saw it.

And I found another DJ/producer who isn't afraid to show how he makes his sound. Airbase, from Sweden, has his own YouTube channel as well. He really takes the time to make his tutorials – and I can tell you, it takes time to make them.

So here's a huge thank you to all who helped me create the tracks I can create now: *Computer Music*, Hydride24 (www.youtube.com/user/hydride24), Airbase (www.youtube.com/user/AirbaseOfficial) and many others on YouTube.

Marco Lemmers, The Netherlands

Yup, there's plenty of music technology tutorial action to be found on YouTube – some great, some not so great. Hydride24 and Airbase's channels definitely fall into the former category, particularly for trance heads. **RM**

The writer of our Message of the month will receive a brand new Cakewalk A-500S controller keyboard, worth £155, courtesy of Cakewalk and Roland!

www.cakewalk.com



Off the Record

I'm a die-hard fan of Reason since version 1. When Record was announced, I was excited as a kid in a candy shop, as I'd always wanted audio in Reason!

When I started the beta testing, instantly I felt that something wasn't right! The application was so crowded, especially by its new mixer, that it turned my workflow into a nightmare! Even using F5, F6, F7 constantly, I felt that my workflow was frozen, and I've been struggling to get the same results in Record that I was getting in Reason in no time!

In the beginning, I thought I probably had to get used to the new GUI, and after reading your rave review in **cm143**, giving it 9/10, I decided to buy it! But after all these months working

with Record, I've decided to sell it, as it wasn't useful for me!

In my experience, Record demands a lot more clicks and serious scrolling to do the same things that you can do in Reason! It may look like Reason, but it doesn't feel like Reason! Also I felt very frustrated that, although Record is a dedicated audio application for Reason, it doesn't have automatic pitch/tempo, no drag and drop of samples in the sequencer or reversing clips/audio! These are basic functions in all DAWs these days.

I sure wish that you could have mentioned some of these issues in your review.

Just a die-hard Reason user and a completely disappointed ex-Record customer.

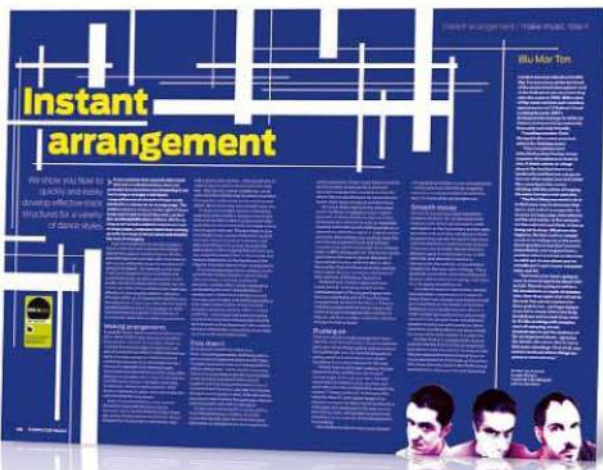
Jameira, Germany



Record's mixer can be a complicated affair, but its power is undeniable

I'm not sure what you mean about struggling to get the same results in Record that you were getting in Reason, since one is for audio production and the other MIDI – ie, they don't do the same thing. And yes, the mixer is a

rather busy affair – that's a by-product of its extraordinarily powerful architecture, though. I'm sorry to hear that Record was a disappointment to you, but given that you'd already decided you didn't like it



Instant arrangement (cm148) offered advice on finishing your tracks

through hands-on experience with the beta, I don't get why you bought it or what you were expecting to have changed in the final build. **RM**

The finish line

I had to take a break from *Instant arrangement* in cm148. Are you guys spying on my computer or what? I thought I was the only person that had this problem. When I bought my Neko, I thought for sure I would finish songs that I would start, but right now I have 85 partial songs on the hard drive. Then I saw this article.

Typically I don't start a song with a preconceived notion of where it's going. I tinker with some keys to get a rhythm, then drums, bass, etc, until I have a couple of bars of what I consider to be the 'all-in' part of the song. I have the full intention of coming back and finishing it. But when I sit down again, it feels too daunting. With this article I can go back and try and finish a few of my 'masterpieces'.

Thanks for being there for us dreamers.

Jimmy Vestal, Illinois, USA

Your 'cyclical' approach to music production will ring bells with many readers, I'm sure (it certainly does with me) and it can indeed be a hard habit to break. Fortunately, though, those who missed our *Instant arrangement* feature can still order it via our back issues department - see p113. **RM**

Tweet yourself

I thought you might be interested in the *New York Times* using audio to show how close the finalists were in the Winter

Olympics in different sports. MIDI pattern these, and turn them into brief pieces of music about the finishing line? **nyti.ms/9aPpUy**

I also thought it would be interesting to experiment with limits that have made Tweeting so interesting. I wondered if it would be worth having an audiotweet competition, where everyone has to work within 140 beats. Taking 16-beat loops as a basic unit, that would give 6 total loops (128) leaving a fade in/out with the remaining 12 beats - a new musical format?

John Griffiths, Hoddesdon

Can't promise a competition, but I love the audiotweeting concept! I reckon 140 notes in total (including separate notes in chords, drum hits, etc - every distinct part of every audible event, essentially) would be more appropriate in terms of brevity, though - deliberately ambient epics and low-tempo noodlings notwithstanding. RM

In the beginning

Thank you for the ongoing *Beginners' guide* series. I'm completely new to computer music and your *Effects*, *Audio & sampling* and *Synths* tutorials have been really helpful. Can I politely request that you don't abandon us newbies completely once the series ends, please?

James Thorpe, London

Fear not - although our quintet of *Beginners' guide* cover features ends next issue with a *Mixing* blowout, I can assure you that we'll continue to offer our traditional blend of novice and advanced tutorials until the day the Earth crashes into the Sun. Or thereabouts. RM

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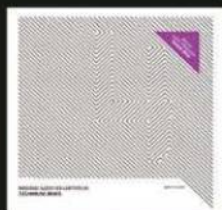
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cm/news

NEW RELEASES > COMMENT > INDUSTRY HAPPENINGS

UA unleash UAD 5.6

Universal Audio release the latest software for their UAD platform, featuring brand new plug-ins



The EMT 140 Plate Reverb (left),
Manley Massive Passive EQ (right)
and Precision Enhancer Hz (bottom)

> Universal Audio, makers of the UAD DSP-powered plug-in system, have released the latest software update for UAD users. UAD 5.6 features two brand new plug-ins and one updated processor.

The first of the new plug-ins is the Manley Massive Passive EQ, a four-band stereo passive tube model based on the highly regarded hardware by Manley Labs. Said to "utilise design strengths from choice console, parametric, graphic and Pultec EQs", it aims to provide character-packed EQing with "specially tuned, overlapping and interleaved frequency choices" for both channel mixing and mastering. In fact, there are two plug-ins included: one for "standard" mixing and the other for mastering, offering

slightly different controls.

Next up, there's the Precision Enhancer Hz, which is designed to add upper harmonic content to bass fundamentals, thus increasing low-end perception on playback systems that lack low-frequency grunt. Universal Audio say that perceived bass response can be increased by anything up to 1.5 octaves, and we'd expect such a tool to be useful for making mixes sound better on laptops and desktop multimedia speakers, for example. The controls are simple, with parameters for Hz Frequency cutoff (ie, the low-frequency range you want to boost), four selectable filter slopes and five modes for various mixing tasks, plus dry/wet balance.

Lastly, Universal Audio have updated their now-officially-endorsed EMT 140 Plate Reverb, with some minor but nonetheless useful adjustments. These include moving the previously hidden stereo width, stereo balance and modulation controls from the back to the front panel for ease of access.

UAD 5.6 is available for PC and Mac as a free download for UAD-2 users. It features demo versions of the three new plug-ins that can be bought separately for unrestricted use: Manley Massive Passive EQ (\$299), Precision Enhancer Hz (\$199) and EMT 140 Plate Reverb (\$199). The EMT 140 works with UAD-1 platforms, too.

www.uaudio.com

AD strike a Discord

> Audio Damage are updating their range of plug-ins with new GUIs, the first of which will be the Discord pitchshifter.

Not just a cosmetic overhaul, though, Discord3 also has a new Granular Chaos mode, with Shift, Duration and Interval controls for both left and right channels, plus an overall Chaos Amount - at its lowest setting, the company say, "the granular pitchshifter functions like the other two

shifters from Discord2". The filter module has been tweaked "to better fit the context", too, so saved patches from previous versions may be subtly different.

Discord3 is due out in April, priced \$59.

www.audiodamage.com

Here's an early shot of Discord3's GUI, a look that'll be carried forward across the range of AD plug-ins



Waves Lord it up

High-end plug-in developers launch new Signature plug-ins



Early screenshots of the Waves Jack Joseph Puig (top) and Chris Lord-Alge (bottom) Artist Signature Collections

After last month's Eddie Kramer-endorsed plug-ins from Waves, the Israeli company have now announced new Artist Signature Collections, the first of which will be a Chris Lord-Alge package. This will be followed later on with a Jack Joseph Puig range.

The Chris Lord-Alge Artist Signature Collection contains six application-specific

"My concept is a simple one that is suited to every musician and aspiring engineer and mixer"

Chris Lord-Alge

plug-ins created from custom CLA effects chains that aim to "give users instant access to Chris Lord-Alge's signature sound". The units included in the collection are CLA Drums, CLA Bass, CLA Guitars, CLA Vocals, CLA Unplugged and CLA Effects, each one featuring mix controls that can be automated to create dynamic mixes.

Hot on the heels of the CLA package will be the Jack Joseph Puig Artist Signature Collection - six more plug-ins built for processing strings, keys, cymbals and more.

Waves' Chris Lord-Alge Artist Signature Collection is out now for PC and Mac, priced \$830. The Jack Joseph Puig Artist Signature Collection is "soon to be released", although no pricing information had been confirmed at the time of writing.

www.waves.com

Mixdown



Hard times are ahead for our Deputy Editor, for he's just been made redundant...

> I've been programming drum parts for years, and back in the old days, I'd create my own sampled kits by scouring my record collection for parts with isolated drum beats, then chopping them into separate hits. Nowadays, we've got the likes of Superior Drummer 2.0 and BFD, which make it a doddle to create super-realistic beats. I play the drums, too, but there's really no need to anymore, at least not when it comes to realising my ideas in recorded form.

I can live with my drumming skills being effectively redundant, because my main instrument is guitar. However, having tried Impact Soundworks Shreddage, I'm thinking about retiring my axe, too, at least as far as rhythm playing goes. Now I can program the riffs straight in - no axe necessary! And no

"Playing an instrument will always be fun in a way that programming simply isn't"

changing strings, no tuning up and so on. If I come up with a riff idea while I'm on the move, I can whip out the laptop and try it out then and there. I'm seriously considering replacing all the guitars in my current project with Shreddage - it means I can adjust riffs at the drop of a hat, and the playing will always be bang on. Of course, software will never match the intrinsically human feel and sheer emotion of a great guitar solo... Ah, who am I kidding? Give it time and there'll no doubt be software that I'm happy to use for that, too.

Playing an instrument is all very well, but it's the music that you make with it that really matters. Judging by this issue's *Burning Question* (p12), though, it seems that software has me beaten once again, or at least it's limbering up to do so.

So are we giving music over to the machines? I don't think so. Playing an instrument will always be fun in a way that programming simply isn't, and live music isn't going away any time soon. And as far as composing software goes, while I can't wait to see what happens in this area, part of the fun for me is in the activity of composing itself - shuffling notes about, trying out chords and fiddling with beats - so I'd approach it as an aid rather than a solution. Mind you, a piece of software that could write this column for me every month would be most welcome...

SPL's transient design

New DrumXchanger drum replacement processor

> Sound Performance Lab have entered drum replacement territory with their new DrumXchanger plug-in, the beta of which was launched at Musikmesse 2010.

The plug-in is said to replace drums in multitracked material in a phase-accurate manner, responding to transients rather than only the level. It uses SPL's Transient Designer technology to detect hits, and the original audio can be muted, blended with the samples or ducked by a given amount.

Sound Performance Lab's drumXchanger for PC and Mac will cost \$528, but a release date has yet to be confirmed.



Sound Performance Lab's DrumXchanger shares the sleek look of their Analog Code plug-ins

www.spl.info



Cakewalk's affordable A-500S (top), more feature packed A-500Pro (middle), and Roland's new SD-50 sound module



Cakewalk get all keyed up

New Cakewalk controllers and a sound module from Roland

> Cakewalk and their owners Roland have been busy of late, releasing numerous new USB MIDI controller keyboards and a sound module.

First up, we have the A-Pro range of controller keyboards, comprising three models: the 61-key A-800Pro, the 49-key A-500Pro and the 32-key A-300Pro. All of these USB bus-powered MIDI controllers have velocity-sensitive keys, and sport eight rotary encoders and eight faders for plug-in and mixer control, 12 buttons for patch switching, a 'sure-grip' pitchbend and modulation stick, eight velocity-sensitive drum pads, and dedicated buttons for DAW transport control.

Formerly known as the Edirol PCR-50, Cakewalk's more-affordable A-500S USB

MIDI controller keyboard features 49 velocity-sensitive keys, a pitchbend and modulation stick, and a single rotary encoder. Like the other Cakewalk keyboards featured here, the A-500S is bus powered.

Lastly, we have the Roland SD-50 Mobile Studio Canvas, a sound module that packs in over 1100 General MIDI 2, GS and Mobile Studio Canvas Solo Tones, plus 32 drum kits. The unit also operates as a 2-in/2-out audio interface, with MIDI In/Out and built-in reverb, chorus and mastering DSP effects.

Cakewalk's A-800Pro (£309), A-500Pro (£249), A-300Pro (£209) and A-500S (£155) are all available now for PC and Mac, as is Roland's SD-50 (£349).

www.cakewalk.com

cm Special

> Our second *Producer Masterclass Collection* is out now, featuring a selection of the very best *Producer Masterclass* videos from the past two years.

The magazine comes with more than 15 hours of video tutorials on the DVD, with Mr Scruff, Shut Up & Dance, John 'OO' Fleming, Deekline & Wizard, Michael Woods, Phonat, Foamo, Ctrl-Z, Atjazz and 13 more of the UK's most cutting-edge electronic producers, all showing you their best tricks firsthand.

Our previous *Producer Masterclass Collection* sold out in record time, so turn to p58 for stockists and worldwide sale dates.

www.computermusic.co.uk



Damaged



Chris Randall gets excited by the imminent arrival of the Apple iPad

> Since, by the time you read this, the Apple iPad will have been released in the United States, I feel obligated to write something breathless about it. "It will change music creation as we know it!" Something like that. I won't deny that I'm seriously intrigued by the little guy, both as a developer and as a musician. Intrigued enough to pre-order one anyhow. But anything I write at this point would be essentially speculative fiction, and I'm not in the business of sci-fi, unfortunately.

I find it interesting that, in the era of bigger, faster, stronger computing, where everyone has something approaching a supercomputer in their messenger bag, a relatively low-powered device like the iPad could garner so much public interest. The fundamental fact to consider is that people are generally more interested in usability than raw power when given a choice between the two.

"All the tablets coming out this year will usher in a new era of performance and control"

The iPad embraces the concept of cloud computing by essentially operating as a window to the network and not much more. Sure, you'll be able to play some pretty good games on it, and many developers will be taking advantage of the streamlined sales pipeline and ease of development to release interesting audio software. But ultimately, the power of the device lies in its ability to talk to the outside world, and the ability of your 'real' computer to listen. The iPad won't be able to host an Ableton Live session, but it will most assuredly be able to control one.

Ultimately, I believe that it and all the other tablets coming out this year will usher in a new era of performance and control, where the 'DJ checking his email' that you paid £30 to see will be a thing of the past, and for that, if nothing else, we should all be exceedingly happy to welcome the iPad and its cousins in to the world.

Chris Randall is the co-owner of Audio Damage, Inc, and proprietor of the Analog Industries blog, on which he regularly pulls no punches.

www.audiodamage.com
www.analogindustries.com
 Twitter@Chris_Randall



Toontrack BeatStation

Swedish percussion experts announce brand new instrument

BeatStation's GUI enables users to move drum pads into custom configurations



> Toontrack have given us the heads up on their latest software, which sees them explore new areas of music production. BeatStation is a skinnable instrument for quickly producing drum loops, basslines and melodic elements.

The software can load whole loops and WAV and MP3 samples onto its pads – REX loops can be sliced automatically, too, enabling users to cut and paste individual slices onto the pads. To get you up and running, it also includes percussion, lead and bass sounds in REX and MIDI formats.

When asked if BeatStation has a built-in step sequencer, Toontrack said that, although it can operate standalone, it is best used in conjunction with a separate sequencer. Nevertheless, the company assure us that BeatStation is “a powerful, yet operationally simple instrument, with a shallow learning curve”. And, of course, it

will be able to load a variety of Toontrack's excellent drum expansion packs, too.

Toontrack's BeatStation will be released in June 2010 for PC and Mac. No price has been announced as yet, but the company say that it will be “very, very affordable in relation to other platforms on the market”.

www.toontrack.com

“A product firmly placed in percussion that adds melodic components in time with the way music is produced today”

Toontrack

Trackers & Demoscene



Renoise 2.5 is released and we look forward to the 8th Annual Scene.org awards

> Renoise 2.5 is upon us at last. This is a big update that brings many weighty and very welcome features to the already rock-solid tracker. The visually pleasing Pattern Matrix makes arranging song information roughly a million times easier and we're already so used to it that the thought of composing without it brings us out in hives. Among other additions are a host of new effects and devices, including sidechaining, the ability to render the output of VST instruments as samples and – something sure to open up

“It's more democratic (and far more important) than the upcoming general elections”

a whole world of new possibilities for all – cross-track routing for Meta Devices. Go and grab it now: www.renoise.com

The 8th Annual Scene.org awards are fast approaching – an opportunity for all purveyors of demoscene goodness to nominate their favourite productions of 2009. It's more democratic (and far more important) than the upcoming British general elections, so don't waste your chance! Head over to awards.scene.org/voting.php and cast your vote.

DEMO OF THE MONTH

Like there's no tomorrow by Farbrausch Germany's annual Breakpoint demo party has been going strong since its launch in 2003. Arguably the most important demo party on the calendar, Breakpoint attracts over a thousand visitors each year, and the aptly named *Like there's no tomorrow* is the invitation to this year's outing.

The demo is a remix of two of Farbrausch's previous masterpieces, *The Popular Demo* and *Debris*, with pastiche music from kb to match. Find the link to it on your **cm** DVD.

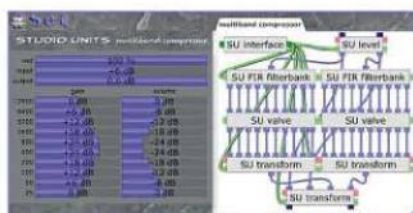


Pastiche from Farbrausch for this Breakpoint invite

Studio Units for sale

> Studio Units Software have released an interesting set of modular effects units, called the Studio Units Plugin Collection.

The SU Plugins themselves comprise basic building blocks and components such as gain, filtering, valve emulation and so on. These can be combined, along with third-party plug-ins, to create custom effects and instruments. Also included in the collection is the SU Library, which contains a host of ready-made patches, including EQs, compressors, filters, delays and so-called “special processing” patches, such as the Transient Controller, which splits signals into attack, decay and sustain components that can be boosted or attenuated to reshape the volume envelopes of your sounds.



The modular Studio Units Plugin Collection enables you to build your own effects from various modules

The Studio Units Plugin Collection is out now for PC (we're told a Mac version is currently in development), priced \$117.

www.studio-units.com



Can software replace a human composer?

> Music technology has advanced immensely over the last 20 years or so, bringing us to the point where the average home computer can function as a powerful virtual studio. But despite the abundance of high-quality virtual instruments, effects and recording programs, there is very little software that can actually write music for you – or indeed, with you – and none that has a particularly high profile.

Algorithmic composition software does exist, of course, but most of us associate it with 'experimental' output, rather than the kind of structured music that we associate with human composers (ie, the kind of music most of us aim to create). Software has a habit of surprising us,

"There is very little software that can actually write music for you"

though, and one program in particular has been creating a buzz of late for its ability to create original pieces of 'human'-sounding music. The software even has a human name: Emily Howell.

Emily's creator is David Cope, a professor at the University of California, Santa Cruz. He previously created EMI, a program that could

analyse the works of a composer, be it Bach, Mozart or Cope himself, and produce music in that style. Emily Howell goes further, using EMI-generated tracks as a database of 'influences' – the user gives the software feedback as the piece evolves, driving it towards what they want to hear.

Ghost in the shell

The results are original pieces of modern classical music that do not sound derived from any specific composer. Emily's music has been performed in concert and her first CD is out shortly on Centaur Records. Amusingly, when audiences were not told that they were hearing music composed by a computer program, their response was rather positive, whereas when told, some immediately claimed that the music was soulless and suchlike.

To give us a better idea of what it's all about, David Cope is on hand to answer our questions. There seems to be a dearth of such software – is no one interested in it?

"I wouldn't equate a lack of software with disinterest in algorithmic composition. There are many, many composers working in this area. Most, however, are too busy composing and not so interested in creating software."

"The types of software I have created are highly specialised. For example, most of the

output from Experiments in Musical Intelligence involves replications of historical musical styles. The output from Emily Howell is unique to 'her' and my views of musical style, biased as they are on the complete output of Experiments in Musical Intelligence. Emily, then, is a second-generation algorithmic composer.

"Other people make their own types, often quite different from these applications. For example, there are programs based on neural networks, genetic algorithms, agents and multi-agents, and so on. Commercially-available algorithmic composing software varies widely, some are interactive, and some are not. Emily is interactive and uses an association network. No other software includes such a network."

Assisted steering

Emily Howell requires an operator to 'steer' its output in the desired direction. How is this accomplished and why is it necessary?

"The user of the software acts as a kind of audience, just as we human composers do in real life. Most of us real composers do not want to admit that we're influenced by the comments of audiences and critics. But for me, at least, that's a less than honest admission. We are influenced, whether we know it or not."

"Emily takes language and/or music as input. Any language. In other words, the program contains no words or other predetermined rules about a particular language. Such rules are created as the interaction proceeds via the use of '*' signifying 'no' and '^' signifying 'yes'. When the program encounters these, it reduces or increases the values of initially randomised weights, thereby honing the program towards the direction that the user wishes it to go. The reduction or incrementing of these weights is very subtle, however, and thus the program is capable – very capable – of surprises."

Cope goes on to explain that he accepts very

little of the program's output for performance, but that the same is true of his own output, thus it's really down to the user's preference and expectations as to how much of the program's output can be considered 'usable'.

We enquire as to whether Emily can compose music such as rock and dance.

"The genres you mention are based more on criteria with which the program does not deal," explains Cope. "For example, rock and dance music depend a lot on lyrics, beat, repetitious forms, and so on - areas that are not particularly important to the Emily Howell program."

So where does Emily Howell fall short?

"I think the biggest shortcoming is musical form. The works tend to be through-composed and when they're not, I really have to work to get some semblance of structural and formal order in the output. Emily can create interesting forms, but they tend to be quite different to the ones we are familiar with. I find this a plus rather than a minus - others may see it a different way."

Emily Howell has drawn fire from some quarters. Why is this?

"I get extreme responses from those that feel software on machines somehow 'steals' the creative process they feel only humans innately possess. These people have not thought it through. After all, humans create machines, the software, and often, the databases that the software uses to compose. What's not human about the process? What we've done is to simply automate parts of the composing process to make it faster and more accurate.

"I often give the architect model as a frame of reference for those having problems with computer composition. Architects provide the grand design, the basic structure of the building. For the most part, I think that algorithmic composers do much the same, leaving the details to computer programs, just as architects leave the details to contractors or builders. When I use programs like Emily Howell, I have destinations in mind. We might not get exactly there, but like the architect having to deal with a particular landscape in which to build a house, I can live with the results."

Future music

We ask David for his thoughts on a future where 'computerised composing' is accepted.

"I think that computerised composing, as you call it, is accepted and advanced now among those who understand the principles involved. It's the listening audience that's confused about it, even though most of them have heard it many times in their life already, accepted it and so on, without knowing, and therefore without having to deal with it conceptually. While I hope that we will create programs that can do what we ourselves do, it will take some time for that to occur - long beyond your or my lifetimes."

If you fancy working with Emily Howell right in the here and now, though, listen up...

"The various programs that make up the bulk of Emily Howell's software are available at artsites.ucsc.edu/faculty/cope/, in association with the book *Computer Models of Musical Creativity*. I encourage those interested to read the book and check through the software."

To sum up, while software might not replace humans outright, the fact that it can work alongside us is potentially more appealing. **cm**

Ins & outs



FULL STEAM AHEAD

Many Mac users are looking forward to the arrival of Valve's games distribution service Steam and actual games (including the mighty Team Fortress 2) for OS X in April - we only hope that it doesn't all turn out to be vapourware. Ahem.

REVERB DECAYED

UK music retailer Reverb has gone into liquidation, having suffered the same dosh-less fate as their predecessors Sound Control. We're toying with the idea of picking up the baton and opening a dedicated **cm** store... Anybody want to lend us a few million to get the ball rolling?

UPWARDLY MOBILE

Digital modelling wizards Line 6 have surprised us with their first iPhone product: it's a MIDI interface, complete with good old 5-pin DIN ports. To get started, there's a free app, MIDI Memo Recorder www.line6.com

GOING RADIO GAGA

We'd never heard of it until last month, but we're now absolutely outraged that the Beeb are shutting down BBC6. More seriously, we have to wonder how important mainstream radio is nowadays for the internet-entangled music scene.

WOT, NO COLOUR CLASH?

The video for Richy Pitch's new tune *Blackstar* will thrill ZX Spectrum fanatics - check it out and you'll see what we mean. Watch out for cameos from a few old friends, too... bit.ly/90eq5V



CLIVE'S INK LAIR

ZX Spectrum hero Sir Clive Sinclair recently revealed that someone reads him his emails. We imagine them printed out on a dot matrix printer, with Clive hanging on steadfastly to his trusty quill and ink. Hence the headline above.

Busting jargon



Computer music terminology explained. This month: **Chorus**

The aim of a chorus effect is to make one instrument sound like a chorus of many playing in unison. When real musicians play together, there are always minor timing and pitch discrepancies, which are what give a real-life chorus of singers (or players) such a thick sound. Chorus effects mimic this, whether by using analogue circuitry (eg, in guitar pedals) or digitally (as in plug-ins).

This is done by creating a copy of the source signal, then delaying it slightly, usually by no more than about 20ms - a delay this small is perceived more as a 'doubling' effect than an actual echo. The pitch of this delayed signal is then modulated using an LFO (note to tech-heads: this is almost always done by modulating the length of the delay line, which has the knock-on effect of changing the pitch, too).

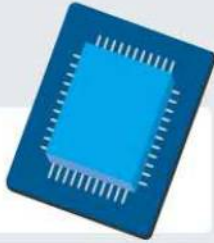
To create an even bigger sound, a chorus may use multiple 'copies' (aka voices or paths), each with different delay/pitch settings applied, and these might be panned, too, creating a stereo signal, even if the input is mono. Each voice might also have its own LFO.

Some choruses are designed to be used with bass instruments, and these feature a high-pass filter applied to the wet part of the signal, thus ensuring that only the upper frequencies are 'stereoised', while the bottom end is kept in mono. It's undesirable to apply chorus to bass frequencies because the stereoising effect is basically caused by stereo phase cancellation, where the left and right channels are not entirely in phase. This can cause bass frequencies to 'disappear', especially if the music is played in mono.



Audio Damage's Fluid is an especially tasty chorus plug-in that mimics old-school hardware

System check



Weird and wonderful goings-on in the wider world of computing

ADVENTURES IN INFINITE SPACE

If you've used a laptop in your music-making endeavours at all, it's highly likely that at some point you've run out of USB ports. Hubs can go some way to alleviate the situation, but for the ultimate in stylish solutions, check out this idea, dubbed Infinite USB, from Chinese design student Gonglue Jiang. That's right, potentially infinite, colour-coded USB slots!

Sadly, this is just a concept, and of course, USB has limited bandwidth, so it's wouldn't be actually possible to use limitless devices concurrently. Gonglue has devised an external power connector that fits into his aesthetically pleasing chain, too, however, which he reckons will keep the thing juiced up. We hope this idea becomes a reality, because as we always like to say here at **cm**, you can never have too many slots.

www.jianggonglue.com



Plugging in USB devices has never been so much fun!

THE BYTE STUFF

If you're using Windows XP and intend to upgrade your computer with a new hard drive, then watch out, because the format of new drives is about to change significantly. Currently, hard drives are formatted in 512-byte blocks, but thanks to the International Disk Drive Equipment and Materials Association (IDEMA), all major hard drive manufacturers have committed to adopting a 4K block standard by the end of January 2011.

This new standard is less wasteful, as it uses less space for error checking, but operating systems prior to Windows Vista and OS X 10.4 aren't designed to work with it. As a workaround for Windows XP, the new drives will act as if they still use the old 512-byte format, but users may experience a 10% dip in performance. If you've been putting off leaving XP behind, now might be a good time to think about biting the bullet and leaping up to (the vastly superior, honestly!) Windows 7.

www.idema.org

LEVEL PEGGING

Groundbreaking boffins at MIT have devised a new technique that involves stretching molecular copolymers between silicon posts - much like the old rubber band and peg toys that more mature readers may remember.

Molecular copolymers are two mutually repelling molecules that are attached to each other, and they can be used to form specific shapes as they move as far away from each other as possible. This means that the patterns they create can be predicted when they're deposited on the silicon pegs, enabling manufacturers to create more complex silicon wafer circuitry than is currently possible - this is a potentially very important development for computing, since we're already coming up against the limits of the current photosensitive, chemical-based circuit creation techniques.

web.mit.edu

Intelligent Devices

> Chris Mandra

The Product Specialist from the Maryland-based pro audio company gives up his brains



Eye on the Industry

cm Tell us how the company formed

CM "Intelligent Devices was founded in 1995 by Stephen St Croix and Edmund Pirali to provide state of the art audio solutions to the Pro Audio community.

"Stephen (aka Steven Marshall) invented the Marshall Time Modulator in 1974, held patents in various fields, restored the soundtracks for *The Wizard of Oz* and *Gone with the Wind*, to name a few, and wrote the *FastLane* column for *Mix* magazine for almost 20 years, until his death in 2006. Edmund Pirali started playing with digital audio with the first real usable DSPs and has never looked back. He had been consulting on many pro audio projects for various companies when they first met. One of the first collaborations between Edmund and Steve was the Macintosh control software for the Quantec Room Simulator (QRS)."

cm How is Stephen St Croix still influencing the company?

CM "I'd like to quote Edmund here, from a blog post on our website: *"Steve taught me a lot about audio. But the most important thing he taught me was to hold all things audio to the highest, most ridiculous and unattainable standard. Then make it better. There were times when exhausted about some detail of some product we were working on, I'd*

"It's like a tuxedo: it may look good, but it's not for everyday use"

scream, 'Damn it, it's better than everything else by miles!' He didn't care... I wanted to strangle him, but he was right.

"Besides memories, pictures, history and knowledge, I carry what I call 'the spirit of St Croix' with me for every project. It's almost a cliché, but

I always ask, 'What would Steve do?' Or, more accurately, 'How would Steve tear this thing to shreds before feeding it to his cats?'"

cm With the Marshall Time Modulator plug-in, why didn't you recreate the original look of the hardware?

CM "Classic hardware user interfaces were designed using what was available at the time: switches, knobs and analogue meters or 3-4 LEDs. Although there is an attractive nostalgic element, it's a little like a tuxedo: it may look good, but it's not for everyday use. You have a mouse and a display and you're trying to manipulate an image of physical items that don't exist! And you're wasting a large amount of screen real estate without any useful information being displayed.

"We didn't recreate the Time Modulator, because it's 'vintage' - we recreated it because it's the best-sounding flanger in existence, analogue or digital. The sound is what matters. We also added some functionality that couldn't be represented on the original interface."

cm What's next from Intelligent Devices?

CM "We'll be releasing AU and RTAS versions of the current line-up with added functionality, and bringing this to the VST versions, too.

"As far as the wackiness is concerned, we'll continue to do things that are of interest to us. If we were to offer compression or reverb, it would be because we felt like there was a new way to approach the concept that had been missed, ignored or under-exploited, or because there was a way to make significant improvements in sound quality."

Xfer have got a Nerve

> Xfer Records have announced Nerve, a drum machine that the company says "brings powerful beat creation and manipulation to your host sequencer".

Nerve contains 2GB of factory content and presets for a wide variety of dance genres, including drum kits, one-shots, loops and patterns. A quick look at the list of sample suppliers reveals the breadth of this content: Richard Devine, Dom Kane, Sample Magic, PowerFX and more. You can drag and drop samples onto the interface in WAV, AIFF, REX and AKAI SND formats, too.

There's a built-in step sequencer, 16 pads (each holding up to 16 slices of a loop), groove extraction, the Repeater for creating rhythmical variations, loop slicing, internal sidechain compression, granular



Xfer Records' Nerve certainly looks good, and we're looking forward to checking out the quality of samples from their team of dance music producers

timestretching and resampling, plus eight stereo outs for external processing/mixing.

Xfer Records' Nerve, for PC and Mac, will be released in April, priced \$199.

www.xferrecords.com

"Nerve was designed and coded by veteran dance music producers, with a diverse sample library included"

Xfer Records

News in brief

ARTURIA HOP TO IT

New from Arturia is Hip Hop Producer, combining cutdown versions of four products. Included in the package is the Analog Factory Hip Hop synth, Ableton Live Lite 8 DAW, AAS's Lounge Lizard Session electric pianos and 1200 hip-hop drum samples from ModernBeats. Arturia's Hip Hop Producer is out now for PC and Mac, priced £115.

www.arturia.com



DISCODSP DISCOVERY PRO R5

DiscoDSP have released the latest version of their flagship VA synth. Discovery Pro R5 adds 250 "popular" synthesiser waveform files for use in the Wave Oscillator, a Wave Pad Synthesis Button (using the PADSynth algorithm to resynthesise any WAV into a SFZ file), and a new voice-stealing algorithm. There's also a new MIDI CC button mode for taking control of the synth's plentiful parameters. DiscoDSP's Discovery Pro R5 is out now for PC and Mac, priced £130.

www.discodsp.com

REBEAT DIGITAL CORRECTION

We stated the wrong sales percentage taken by Rebeat Digital in our News story in cm 148. For their music distribution services, Rebeat Digital only take 15% of all sales, not 25% as we originally said. What's more, the company now offer even more for those looking to sell their music online, including widgets enabling you to easily promote your music via social networking sites.

en.rebeat.com

COMPETITION WINNERS

In cm149, we partnered up with Nomad Factory to offer their Integral Studio Pack, containing a whopping 47 plug-ins and worth a substantial £1499. So who won this stupendous prize? Why, it was Attila More of Hampshire - well done!

Now turn to p87 to find out how you could win a fantastic Total Bundle from D16 Group!

Soundware news

> Joining the ever-expanding Artist Series from Loopmasters is **Riley & Durrant Progressive House Producer Vol 2** (£25), an almost-900MB library of loops, hits and FX for a variety of house sub-genres. Also from Loopmasters comes **Tech House & Deep Minimal** (£30), an 800MB collection containing ten construction kits with drums, bass, synths, glitches and FX for many modern house styles.

www.loopmasters.com



Bela D Media have upgraded their classical Diva female vocal pack to **Diva Revamp** (£149) for NI's Kontakt, bringing together Diva Classical Female Soloists, Diva Extended, Diva By Design in one all-singing, all-dancing DVD. UltimateSoundBank have

released **Acoustic Toy Museum** (£319), featuring multis, loops and phrases from toy pianos and music boxes to baby drums.

www.timespace.com

Propellerhead have unleashed **Hitman Drums Vol 2** (£22), containing 400 samples for creating modern hip-hop and rap tracks in version 4 of their Reason software.

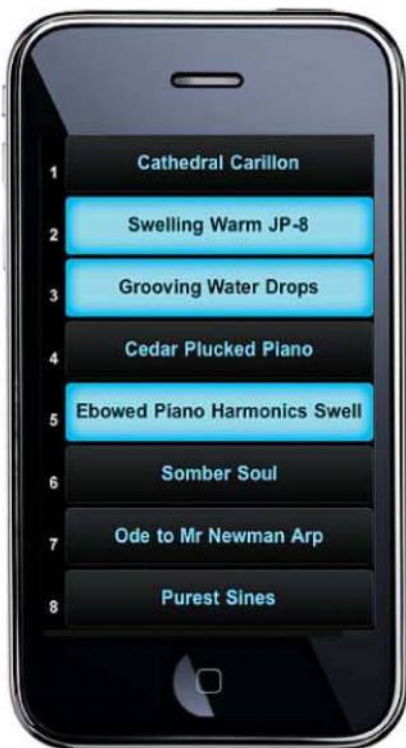
www.propellerheads.se

FXpansion have released **Signature Snares Vol 2** (£35) for the company's BFD2 drum software, featuring Gadd Signature, Chamberlin, Robinson Signature, Leim Signature and Garibaldi Signature snares recorded in a variety of mic positions including top, bottom, side and room.

www.fxexpansion.com

Native Instruments have an abundance of piano sounds this month, the first of which is **Alicia's Keys** (£99), based on the Yamaha C3 Neo grand piano that Alicia Keys uses (and she is intending to take NI's software on tour with her) and spread over 17GB worth of samples. More Ivories come in the form of the **Scarbee Vintage Keys** bundle (£149), comprising the A-200 and Mark I electric pianos, plus a clavinet and planet, all adding up to nearly 6GB.

www.native-instruments.com



Change patches in Omnisphere wirelessly with Spectrasonics' Omni Live



The main playing screen in Sonosaurus' ThumbJam gives access to four octaves for each instrument



Game overture

The latest goings-on in the world of videogame music production

> Good news for fans of indie games and high-energy chiptune: Ash Eskrett (better known by his alias Sabrepulse) has provided the soundtrack for a retro-styled arcade blaster called Bit Pilot. Eskrett is known for his blend of poppy melodies with aggressive rhythmic attacks, and he's been responsible for bringing chiptune to a more mainstream audience in the UK without compromising his 8-bit aesthetics: a noble achievement. It's very fitting, then, that he should be scoring one of the many retro-esque iPhone games hitting the App Store on a regular basis. We've often wondered when these two scenes would start getting together and making friends, as we'd love to see further collaborations between those exploring different aspects of 8-bit art.

Bit Pilot is a frenetic iPhone/iPod touch shmup (that's what the kids call shoot-'em-ups these days) by designer Zach

"At only 59 pence, we reckon that you could do a lot worse than take this stylish little blaster for a spin"

Gage. The game is consciously pared down, marrying simple touch controls with fast-paced, addictive gameplay. At only 59 pence, we reckon that you could do a lot worse than take this stylish little blaster for a spin - you'll get some great music for your trouble, as well.

According to Sabrepulse's website, "All of the tracks are LSDJ, most of them are new and there will be an additional four tracks that will be released during updates for the game. The soundtrack will be released on CD and downloadable once all the updates are complete this year."

Head over to www.bitpilotgame.com, and check out Sabrepulse's blog at sabrepulse.blogspot.com for all his news, as well as a host of chiptune-related links.



It may not look like much in the graphics department, but Bit Pilot's creators have concentrated on gameplay and quality music

App watch

New music-making apps for iPhone and iPod touch

> Sonosaurus have unleashed ThumbJam, a music performance app that contains 30 multisampled instruments, including guitars, bass, keys, percussion, classical patches and more. The instruments are played on a screen full of horizontal bars that represent four octaves' worth of notes, with many performance characteristics such as vibrato and volume swells implement by shaking and tilting the iPhone. A variety of scales can be chosen, too, so you'll never play a bum note, and you can even import scales in Scala format.

Sonosaurus' ThumbJam is available from the App Store now, priced £3.99.

thumbjam.com

Spectrasonics have unveiled their first app for iPhone/iPod touch. Omni Live connects to your computer via a WiFi network and provides remote control over the Live Mode of the company's Omnisphere synth. Essentially, the app only enables you to switch patch layers in and out, rather than delivering any sort of 'parametric' control.

Spectrasonics' Omni Live is free to download from the App Store now - note, however, that it currently only works with OS X versions of Omnisphere 1.2 and above.

www.spectrasonics.net



Argon from iceGear sounds as sweet as it looks - check out the online videos to hear what we mean

Last but by no means least, iceGear have released a monophonic VA synth called Argon. This fantastic-looking instrument includes three oscillators (with a choice of saw, square, triangle, sine, noise and formant wave shapes), with LFO and envelope control over each parameter, hard sync between oscillators 1 and 2, an LFO section, plus FM for modulating the phase of oscillators 2 and 3. There's also a filter section with six filter types, an amp and EQ panel, a delay effect, step sequencer, loop recorder and much more. We highly recommend that you check out the online video and audio examples to discover the full extent of what this app can do.

iceGear's Argon is available to download from the App Store now, priced £1.19.

iphone.icegear.net

All the big Musikmesse news from the 2000 show and the death knell of dial-up internet

> In our 21st issue, we were very excited about all the goings-on at the Musikmesse 2000 show in Frankfurt, particularly after seeing Propellerhead's Reason in action for the first time, the unveiling of Steinberg's Cubase 5 (er, that is, the *original* Cubase 5) and Digidesign's affordable Digi 001 Pro Tools system.

Tutorial-wise, the June 2000 issue of *Computer Music* featured a massive guide to Logic Fun (a cutdown version of Logic that we gave away on the disc), how to make acid basslines with the '303' unit in Propellerhead's ReBirth RB-338, and how to get the most out of the IPS (Interactive Phrase Synthesiser, of

"We can thank the first people with more money than sense for supporting the move"

course!) in Cubase. The lead tutorial that month, though, was *50 bass programming tips*, which aimed to help readers nail those low-end grooves.

Lastly, in a feature on digital audio formats, we reported that British Telecom had installed broadband ADSL in over 400 of their telephone exchanges, a system that was eventually to replace the old analogue ISDN model. At the time, such a service cost £50 per month, so we can thank thousands of people with more money than sense for supporting the move and opening the way for music, samples and software to be kicked around the net at high speed! **cm**



cm21 showed readers how to create punchy, full basslines for the new millennium



Drive time

Robin Guthrie

The former Cocteau Twin tells **cm** all about the software used to fashion his beautiful new solo EP

IZOTOPE ALLOY

"This is something I recently tried out – a channel strip seemingly based upon their Ozone technology. I find it rather pleasing and very transparent. It's nice to see a channel strip that doesn't try to emulate some vintage hardware with a fancy little graphic in order to appear more 'classic'."

SONNOX OXFORD TRANSIENT MODULATOR

"This is a plug-in designed to alter the transients in a signal – it's a little out of the ordinary, but I've found it useful, especially for softening the attack of picked string instruments. Computers offer an infinite palette of sound creation tools for you to explore, but becoming biased towards a certain platform or manufacturer runs the risk of limiting one's horizons."

SOFTUBE VINTAGE AMP ROOM

"In spite of its kind of tacky interface, this can sound surprisingly authentic and it certainly provides a nice starting point for building a natural sounding guitar amp sound. I sometimes find myself thinking, 'Is the software I use my favourite because it's the best for me, or because I use it day in day out and know it back to front?'. I'm guessing the latter is probably the case."

OHM FORCE OHMBOYZ DELAY

"Again, this is another plug-in with a very tacky interface, but it's certainly worth checking out if you are looking for a delay that's slightly out of the ordinary. Lots of nice features, like resonant filters and LFOs."

"Computers offer an infinite palette of sound creation tools"

NOMAD FACTORY BLUE TUBES ANALOG CHORUS CH2S

"A modulation plug-in that I find very rich, without the metallic quality of most modulation plug-ins. It's very smooth and controllable, but the fancy fake analogue interface isn't fooling anyone. However, I seem to be attracted to anything that avoids the ubiquitous Pro Tools/Logic/GarageBand hegemony. People tend to forget that it's the musical vision that comes first and the tools to realise that vision are secondary. It's great for percussive material and it can breathe new life into boring elements. There's an in-built sequencer that enables you to change time signatures to 3/4 or 7/4, too, which makes things really interesting."

Robin Guthrie's *Sunflower Stories* EP is out now on Rocket Girl
www.robinguthrie.com

Fat H3500

By sampling the Eventide H3500 harmoniser hardware effect, Goldbaby has created yet another fine (and free) sample pack



Developer **Goldbaby Productions**
Format **Kontakt 3, EXS24**
Web **www.goldbaby.co.nz**

Fat H3500 is the latest freebie from sample library mogul Hugo Tichborne, aka Goldbaby, the mind behind such impeccable sample sets as The Tape 808 and new Fat Juno-6. Fat H3500 features a selection of multisampled patches created with the help of an Eventide H3500 harmoniser effect. We asked Hugo what the inspiration behind this latest soundest was.

"I recently picked up the H3500 off eBay, and discovered it could actually be played like an

It was necessary to do four round robin layers for each note, as the sound changes each time you hit a note. So the result is kind of organic, albeit in an electronic way. The pack includes five Kontakt and five EXS24 instrument patches made from the two H3500 programs, they're kind of based on a clav and a harp - albeit very electronic-sounding. It's only a small instrument pack, so I thought I'd give it away for free."

Any tips for users of the Fat H3500 patches?
"Lush, soft reverb should be nice with these patches. Try playing them with an arpeggiator as well: Kontakt and Logic both have them."

"I don't want to sound like some new-age hippy, but I do like the idea of karma"

instrument using its MIDI input! The sound is produced by using short delays with feedback to create resonators, which is similar to a resonating string. I sampled two patches from the H3500 through the UBK Fatso compressor.

Finally, how successful have the free sample packs been?

"They certainly have been successful: my most popular free pack, Tape Vermona DRM, has been downloaded over 15,000 times! The next most popular, Cassette808, has been

downloaded just over 12,000 times! I do plan to continue making free stuff, I believe the goodwill that I get is worth it. What goes around comes around. I don't want to sound like some new-age hippy, but I do like the idea of karma."

Togu party

It seems as if Togu Audio Line's Patrick Kunz never stops working. His latest releases are 64-bit PC versions of most of his plug-ins, including Roland SH-101 emulation TAL-BassLine, chorus effect TAL-Chorus-60, feedback delays TAL-Dub 1 and 2, virtual analogue synth TAL-Elek7ro-II, modulation effects TAL-Flanger and TAL-Phaser, Juno-6 clone TAL-U-No-62, and the TAL-Vocoder vintage voice effect. kunz.corrupt.ch

Hot cross fun

Robin Schmidt's latest is CrossOver, a PC VST plug-in that splits an audio signal into separate bands, enabling users to create their own multiband effects. It works by splitting the incoming audio signal into separate frequency bands, each with its own output. The band splits can be adjusted between 12 and 96dB per octave, but the catch is that you'll need a modular host to use the effect properly. www.rs-met.com

A Bit special

Super-Swede Shuriken has released another freebie in the form of BitTest. This unusual bit-crusher effect enables you to turn off or invert each bit, resulting in all kinds of distinctive lo-fi effects. The plug-in was originally only available as a Mac VST effect, as Shuriken has announced his decision to stop releasing Windows-based effects, but since then, a PC VST version has thankfully been released. www.shuriken.se



Freeware Classic Augur

Developer **Antti Huovilainen**
Format **PC VST**
Web **users.tkk.fi/ajhuovil/vst.html**

Augur is an emulation of the classic Sequential Circuits Prophet VS synth and was created by Antti Huovilainen, the developer behind the excellent freeware MiniMoog clone ASynth. The Prophet VS, dubbed a "digital Vector Synthesizer" by its Sequential

"If you're interested in the quirkier side of synthesis, download Augur and give it a try"

Circuits creators, was quite unusual in that it featured a joystick that enabled the user to 'pan' between four different digital oscillators, each of which could be set to one of 127 waveforms.

Augur is a pretty rough and ready approximation of the original synth. For example, it doesn't have the 32 editable user waveforms of the classic hardware, and the last update was way back in 2007, so it's unlikely that we'll ever see a completely finished version.

Even so, Augur is a very interesting synth, with some cool features. These include a whopping 16 filter types, a full on matrix for tons of modulation possibilities, the ability to pan each of the eight voices individually and a decent chorus effect for warming up your sounds.

In some ways, Augur is quite limited compared to other soft synths, and its sound benefits greatly from the insertion of delay and reverb plug-ins, but it certainly has a distinctive character, and the way the envelope can be used to move between the different oscillators make it ideal for creating evolving sweeps and short, dynamic sounds.

If you're interested in the quirkier side of synthesis, download Augur and see what you make of it.

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Swissonic MDR-4

Mobile digital audio recorder

24bit, sample rate: 44.1/48kHz, record format: WAV (16/24bit) and MP3 (64/96/224/320kbps), 5 effects (delay, chorus, room, reverb, pitch shift), built-in speaker, 128 x 64 pixel LED display, 1/8" stereo line in, 1/8" external mic in, built-in stereo mic, 1/8" headphone out, Mini-B type USB connector, powered by PSU or 2 AA size batteries, incl. power supply unit, 1GB SD card and USB cable, dimensions WDH: 6,7 x 2,9 x 10,7cm.



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Portable 4-track recorder

44.1kHz/16bit, record up to 2 tracks and playback up to 4 tracks at the same time, record on SD/SDHC card, internal stereo mic, 2 mic/line ins, headphone/line outs 3,5mm jack, level and balance switch for each channel, bounce, locator, cut and undo/redo functions, LCD display, USB 2.0, powered by 4 AA batteries/accus or optional power supply, incl. 1GB SD card, dimensions WDH: 15,5 x 3,4 x 10,7cm.



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Zoom Q3

Handy video audio recorder

Stereo condenser mic, true X/Y configuration, 2.4" LC display (320x240px), video resolution 640x480 at 30 frames per second, video format MPEG-4 SP, NTSC/PAL TV out, audio formats with video: 44.1/48kHz 16/24bit Linear PCM or MP3 up to 320kbps, without video up to 1 hour video with 2 GB SD card, auto record level, includes TV cable, soft case, wind screen, 2GB SD card and 2 AA batteries.



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€ 216.-

Tascam DP-02CF Set

Digital 8-channel multitrack recorder

8-track recording, uses CF card, LC display, 2 mic/line ins (1/4" TRS), 1 switchable to guitar in, 2 XLR mic ins with phantom, effect send and stereo return, stereo line out (RCA), SPDIF digital out (optical), headphone out, MIDI out for MIDI timecode or clock, USB 2.0 port, int. multitrack processor and reverb processor. Bundle including 2GB Thomann Compact Flash Card.



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Sony PCM-M10

Portable 24bit/96kHz audio recorder

Built-in stereo mic, internal speaker, cross-memory recording, internal 4GB flash memory + MicroSD/MemoryStick Micro slot, limiter and low-cut filter, 5sec. pre-record buffer, recording level control, USB 2.0, includes power supply, Soundforge Audio Studio LE, cable remote and cable, finish: grey. Bundle includes accu charger BCG-34H S, MDR-V150 stereo headphones and 4 accus NH-AA B4F.



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24bit/96kHz, 2 built-in mics, internal 8GB HDD, expandable up to 32GB with SDHC card, up to 23 hours record time, edit functions, PCM/WAV/WMA/MP3 record & playback, built-in stereo speaker, display with backlight, SD/SDHC slot, USB, headphone out, silver metal housing, weight: 165g (incl. batteries), connection for external power supply, incl. wireless remote and Steinberg Cubase 4 LE.



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o. code 196368

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4 stereo, 2 aux.

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Rack mixer

10 mono mic/line channels, 2 stereo channels, 16 24bit/48kHz digital effects with tap tempo delay function, 3-band EQ with parametric mids, 4 sub groups, headphone output, 48V phantom power, 4 stereo returns, direct out on each channel, 4 aux, 2 track I/O, balanced output, incl. rack kit.



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Mackie 1402 VLZ3

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€ 325.-

Yamaha MG 166cx

16 channel mixer

8x mono mic/line ins (XLR/jack), 2x mic/line ins (XLR/stereo jack), 2x stereo line ins (jack), 3x aux sends, 8x inserts, 3-band EQ with parametric mids, internal compressors per mic channel, SPX FX processor with 16 programs, 180B high pass filter, high-end mic preamps, 48V phantom power. Dimensions: 47.8 x 10.2 x 48.9cm. Weight: 5.5kg



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Alesis MultiMix 16

FireWire

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Expander

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order code 206255

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£ 86.-

Alesis IO | 2

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order code 197706

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Cakewalk UA-25 EX CW

USB audio interface

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Steinberg CI2

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£ 170.-

Apogee One

USB audio interface

24bit/48kHz, 1-canal A/D, convertisseur stéréo D/A, XLR Mic In avec alimentation phantom connectable, Hi-Z Instrument/Line In, sortie casque stéréo, micro condensateur intégré, contrôleur multifonctionnel pur volume et amplification entrée, LEDs de contrôle niveau I/O, pour Mac OS X 10.5.7 ou plus haut, dimensions: 11,7 x 5,7 x 2,7cm.



order code 233106

€ 189.-
£ 171.-

Digidesign Mbox 2 Mini

USB audio interface

1x mic in with phantom power, 2x analog line/instrument in, 2x analog out, latency-free monitoring, headphone out, Pro Tools LE software, 37x DigIRack and 7x Bomb Factory plug-ins, Pro Tools Ignition Pack.



order code 108023

€ 233.-
£ 211.-

Tascam US-1641

USB 2.0 audio interface

24bit/96kHz, 8 mic/line ins with phantom and level meters on the front, 2 balanced line/instrument ins on the front and 4 balanced line ins on the rear, 4 line outs, monitor out, S/PDIF I/O (switchable to AES/EBU), MIDI I/O, 19"/1RU, for Win XP/Vista 32 and Mac OS X (10.4 or higher), including Steinberg Cubase LE 4.



order code 138750

€ 285.-
£ 258.-

Focusrite Saffire Pro 24 DSP

FireWire audio interface

Virtual reference monitoring technology, real-time effects (EQ, compressor, comfort reverb), 24bit/96kHz, total I/O count of 16 ins (incl. int. loopback) and 8 outs; 2 mic preamps, 4 analog ins, ADAT I/O optical, 1 S/PDIF I/O coax, 2 headphone outs, MIDI I/O, 48V phantom, LED meter, incl. plug-in suite and power supply.



order code 233752

€ 339.-
£ 307.-

Digidesign Mbox 2 Bundle

USB MIDI/audio interface

2x analog ins with phantom power (XLR/jack), 2x analog outs (jack), S/PDIF I/O, MIDI I/O, latency-free monitoring, USB powered, includes Pro Tools LE software (Win XP and Mac OS X), 37 DigIRack- & 7 Bomb Factory plug-ins, Pro Tools Ignition Pack. Bundle includes the Ibone SC450 studio mic and 6m XLR mic cable.



order code 114106

€ 369.-
£ 334.-

Apogee Duet Bundle

FireWire audio interface

24bit/96kHz, 2 channels, FireWire 400 I/O, breakout cable with 2 XLR mic ins, 2 1/4" jack instrument ins, 2 1/4" jack monitor outs, multi-segment LED display input and output levels, multi-function controller knob, headphone out, Maestro software for advanced control and low latency mixing, compatible with any Core Audio compliant audio application, compatible with Mac OS X Core Audio. Bundle incl. original Apogee carry case and 2GB USB stick.



order code 209773

€ 419.-
£ 380.-

Focusrite Saffire PRO 40

24bit/96k FireWire audio interface

20 I/Os, 8 mic preamps, 8 analog I/Os (2 mic/line/instr. combo XLR, 6 mic/line XLR), ADAT I/O, 2 S/PDIF I/Os, 2 monitor outs, monitor switch, 2 separate headphone buses, MIDI I/O, zero-latency DSP mixer/router, incl. plugin suite, 19", 1RU, internal power supply, weight: 3kg.



order code 219725

€ 422.-
£ 382.-

MOTU Ultralite MKIII Hybrid

FireWire and USB audio interface

24bit/192kHz, 2 mic/instrument ins, 6 bal. ins and 10 outs (1/4" TRS), 48V phantom power, S/PDIF I/O, headphone out, CueMix FX, internal DSP, LCD display, suitable for use as a standalone mixer, compatible with Windows and Mac, supports WDM, ASIO and Core Audio, incl. AudioDesk software for Mac.



order code 239141

€ 469.-
£ 425.-

MOTU 828 MKIII

19" FireWire audio interface

28/16 digital mixer with FX, 24bit/192kHz, 19"/1RU, integrated DSP for EQ, compressor and reverb, new CueMix console, 2 mic/guitar inputs with internal hardware limiter, 48V phantom power, 8 balanced line I/Os, 2 XLR main outs, 2 sends, 2 ADAT I/Os, S/PDIF I/O RCA (24bit/96kHz), MIDI I/O, word clock I/O, 2 headphone outs, for Mac & PC.



order code 205183

€ 659.-
£ 597.-

RME Fireface 400

FireWire audio interface

24bit/192 kHz high performance FireWire audio interface, analog technology of ADI-8 converter, mic pre-amp technology of Quad and OctaMic (2 mic pre-amps), TotalMix technology of Hammerfall DSP series, very reliable drivers.



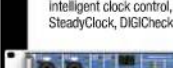
order code 193883

€ 785.-
£ 720.-

RME Fireface UC

USB audio interface

36 channels, 24bit/192kHz AD/DA converter, 48V phantom power, 18 I/Os usable at the same time, instrument input, 8x analog I/O, ADAT I/O, S/PDIF I/O, 2x MIDI I/O, WordClock, intelligent clock control, SyncCheck, SyncAlign, SteadyClock, DIGICheck and TotalMix, 9,5", 1U.



order code 229395

€ 822.-
£ 745.-

Digidesign Digi 003 Rack Factory

24bit/96kHz FireWire interface

8x analog I/O, 4x prof. mic preamps, 48V phantom power, 8-channel ADAT optical I/O or 2-ch. S/PDIF optical I/O, 1x MIDI in, 2x MIDI out, BNC WordClock I/O, dedicated studio monitor out, all control room out, all source in for external device monitoring, dual headphone outs. Incl. Pro Tools LE, Factory plug-in bundle and Pro Tools Ignition Pack 2.



order code 111200

€ 888.-
£ 805.-

M-Audio ProjectMix I/O Pro Tools Bundle

FireWire audio interface

www.thomann.de

Telephone Hotline: +49 9546 9223-55

Fax: +49 9546 9223-24

the t.bone Micscreen Mini

Portable absorber and diffuser

With microphone clamp, reduces the transmission of unwanted room reflections, echoes and ambient noises. Recommended for vocals, instruments, live and studio applications, quick and easy mounting on nearly every standard microphone stand.



order code 223803

€ 66.-
£ 60.-

the t.bone Micscreen

Portable absorber/diffuser

Positioned behind any microphone, reduces the transmission of unwanted room reflections, echoes and ambient noises. Recommended for vocals, instruments, live and studio applications, quick and easy mounting on nearly every standard microphone stand.



order code 209023

€ 93.-
£ 84.-

Rode M3

Condenser microphone

Cardioid pattern, ideal for recording strings, choir and acoustic guitars, 40Hz-20kHz, 130dB max SPL, 21dBa background noise, 200Ω impedance, 48V phantom power or 9V battery, status LED, high pass filter, includes windshield and stand mount. Dimensions: 225 x 33mm (length x diameter). Weight: 360g



order code 114494

€ 95.-
£ 86.-

Rode NT5

Condenser microphone stereo bundle

2 matched small diaphragm condenser microphones, 0.5" gold sputtered capsule, polar pattern: cardioid, frequency response: 20Hz to 20kHz, excellent for drum overhead, acoustic guitar and stereo live recordings, including plastic case, microphone holders and wind screens.



order code 154595

€ 269.-
£ 244.-

Neumann KM 184 Stereo-Set

Small diaphragm condenser mic bundle

2 condenser microphones KM 184 (with sequential serial numbers), polar pattern: cardioid, frequency range 20Hz to 20kHz, incl. 2x WNS 100 windshield and 2x SG 21/17 stand adapter, incl. wooden box.



Finish: silver
o. code 153692

Finish: black
o. code 150648

€ 1155.-
£ 1046.-

the t.bone SC440 USB

USB condenser studio microphone

USB connection for direct access to Mac and PC (doesn't work with Windows Vista!), cardioid polar pattern, frequency range 20Hz to 18kHz, incl. plastic case



order code 197603

€ 55.-
£ 50.-

StudioProjects B1

Large diaphragm condenser microphone

1" Capsule, transformerless circuit, needs +48V phantom power, polar pattern: cardioid, frequency response 20Hz - 20kHz, Sensitivity: -34dB (0dB= 1V/Pa), output impedance: <200 Ohms, maximum SPL: 132dB, noise: 12dB-A (IEC651), incl. foam wind screen, zippered bag and shockmount.



order code 180703

€ 88.-
£ 80.-

sE Electronics SE 2000

Large diaphragm studio microphone

Cardioid pattern capacitor, gold sputtered 1" mylar diaphragm, frequency response: 20Hz - 20kHz, sensitivity: >16mV/Pa -36" ±2dB, Impedance: <200Ω, output noise: <17dB typical (A weighted), THD: <0.5% at 125dB SPL, phantom power 48V ±4V, incl. wooden case and shockmount.



order code 223700

€ 88.-
£ 80.-

the t.bone SC450 Set

Studio large diaphragm microphone

Cardioid, external low cut and -10dB pad switch, impedance: 200 Ohms, requires 48V phantom power, frequency range 30Hz to 20kHz, dim.: 50.5 x 190mm, incl. shockmount and PVC case. Bundle incl. the t.bone MS180 pop shield.



order code 203194

€ 83.-
£ 84.-

SC450 Stereo-Set, matched stereo pair in case, w/o pop shield. € 169.-
£ 153.-

order code 174363

the t.bone SC450 USB

USB studio large diaphragm microphone

USB for direct connection to computer, for Windows XP and Mac OS X, no special drivers needed, phantom powered via USB, polar pattern: cardioid, frequency range: 30Hz - 20kHz, external low cut and -10dB pad switch, incl. shockmount, USB cable and plastic case.



order code 195302

€ 83.-
£ 84.-

AKG Perception 220

Large diaphragm condenser mic

1" diaphragm, metal housing, cardioid polar pattern, frequency range: 20Hz - 20kHz, switchable 300Hz lo-cut filter, switchable -20dB pad, 135/155dB max SPL, incl. elastic holder and carrying case, dimensions: 53 x 165mm (diameter x length), weight: 525g.



order code 208310

€ 138.-
£ 125.-

Rode NT1-A Complete Vocal Recording Solution

Large diaphragm microphone

Frequency response: 20Hz - 20kHz, impedance: 100Ω, dynamic range: 132dB, SPL max. 137dB, incl. deluxe shockmount SM6, 6m cable and tutorial DVD "Studio Secrets" from Peter Freedman.



order code 235937

€ 159.-
£ 144.-

the t.bone SC1200

Large diaphragm condenser microphone

35mm gold dual diaphragm capsule, selectable polar pattern: omnidirectional, cardioid or figure-8, -10dB or -15dB pad switch, hi-pass filter 75Hz or 150Hz switchable, frequency range: 20Hz - 20kHz, impedance: <200Ω, equivalent noise level: 11dB (A-weighted), max SPL: 148dB for 0.5% THD (with pad on), with solid elastic suspension, synthetic leather bag for the mic and aluminum case for mic and all accessories.



o. code 225143

€ 159.-
£ 144.-

the t.bone SCT800 Set

Studio tube microphone

12AT7 tube, frequency range 20Hz to 20kHz, impedance: 200Ω, incl. deluxe case, shockmount and external power supply. Bundle incl. the t.bone MS180 pop shield.



order code 203198

€ 188.-
£ 170.-

SCT800 Stereo-Set, matched stereo pair without pop shield. € 377.-
£ 342.-

order code 174362

Rode NT2-A MS-180 Bundle

Large diaphragm microphone

Polar pattern switchable between omni, figure eight and cardioid, 1" diaphragm, frequency range 20Hz to 20kHz, max. SPL 147dB, delivered with shockmount SM2. Bundle incl. the t.bone MS180 popkiller.



order code 223002

€ 266.-
£ 241.-

the t.bone SCT2000 Set

Studio tube microphone

Truly warm sound, frequency range 20Hz to 20kHz, omni, cardioid and figure-8 plus 6 intermediate stages, up to 130dB SPL, incl. case, shockmount and power supply. Bundle incl. the t.bone MS180 pop shield.



order code 203196

€ 279.-
£ 253.-

EV RE20

Dynamic large diaphragm microphone

RE series, polar pattern cardioid, switchable HP, variable D design, 150 Ohms, frequency range: 45Hz to 18kHz, incl. clamp and box, weight: 737g, length 217mm, diameter 54mm, ideal for vocals, brass and bass drum.



order code 128926

€ 449.-
£ 407.-

AKG C414 B-XLS

Universal multi-pattern mic

5 polar patterns (including cardioid and hyper-cardioid), 20Hz-20kHz, 6/12/18dB pad, 40/80/160Hz hi-pass filter. Includes H85 shockmount and windshield.



o. code 105783

€ 639.-
£ 579.-

AKG C214 Stereo Set

Large diaphragm microphones

Cardioid polar patterns, 20Hz - 20kHz, -20dB pad, requires phantom power (12-52V), incl. clip, metal case and windshield, dimensions: 160 x 55mm, weight: 280g.



code article 222915

€ 649.-
£ 588.-

Neumann TLM 103 Studio Set

Studio microphone

Large diaphragm cardioid microphone, pressure gradient transducer with one-diaphragm capsule, transformerless circuitry, extremely low noise: 7dBa, high-quality professional equipment for limited budgets, finish: silver, incl. shockmount, delivered in a box.



order code 174067

€ 959.-
£ 869.-

ART Tube MP

Tube microphone preamp

Hand selected 12AX7A tube, limiter, +48V phantom power, phase reverse, XLR and jack I/O, perfect for hard disc recording or as a tube DI.



order code 191529

€ 37.-
£ 34.-

StudioProjects VTBI

Tube preamp

Incorporating true class A/B switching, the VTBI is a totally discrete circuit, the tube drive is a variable drive to a 12AX7, that allows the user to blend as little, or as much of the tube drive they want, 48V phantom power, balanced outputs on XLR and 1/4", TRS insert, phase reverse, high pass filter, 5-segment LED metering.



order code 183260

€ 111.-
£ 101.-

dbx 266 XL

Stereo compressor/limiter/gate

Patented OverEasy technology (attack & release times), XLR I/O, -10/+4dB switch, stereo link, dbx sound.



order code 131808

€ 139.-
£ 126.-

dbx 166 XL

2-ch. compressor/limiter/gate, stereo or dual mono, OverEasy or hard knee mode, PeakStop limiting.

order code 131035

€ 218.-
£ 198.-

FMR Audio RNC 1773

Really nice compressor

Stereo compressor with two modes: normal for "effective" compression and super nice for transparent compression, controls: threshold, ratio, attack, release and gain, switches: bypass & super nice.



order code 179985

€ 169.-
£ 153.-

RNLA 7239 Really nice levelling amplifier 10Hz - 100kHz 0.5dB @ 0dBu, clip point: -22.5dBu @ 3% THD.

order code 190166

€ 205.-
£ 186.-

Focusrite Octopre LE

8-channel Class A microphone preamp

8 analog outs, 8 balanced 1/4" jack ins located on front panel for quick and easy access, first two channels can be used for DI free plug-in of guitars and basses, channels 1 and 2 also allow a microphone signal (input using the rear panel XLR connections), frequency response: 10Hz - 122kHz, 19"/1RU, weight: 4.2kg.



order code 178709

€ 255.-
£ 231.-

Presonus Digimax D8

8-channel microphone preamp

24bit/48 kHz digital output, 2 instrument inputs (1/4" TRS), 8 microphone inputs (XLR), 8 XMAX Class-A microphone preamps, pad switch (per channel), 48V phantom power, 8 analog direct outs, optical ADAT output, word clock input (BNC), 19", 1U.



order code 216155

€ 315.-
£ 285.-

SPL GoldMike 9844

2-channel tube preamp

Discrete Class A solid stage, 48V phantom power, phase reverse, pad function, flair presence enhancement, very clear and warm sound, 19" rack format with 2RU.



order code 123370

€ 425.-
£ 385.-

Mindprint Envoice MKII Digital Edition

Valve microphone preamp

Mic/Line preamp, semi-parametric bass & treble, fully parametric mid, EQ, 19"/1U, incl. DI-MOD USB digital interface with USB.



order code 182221

€ 469.-
£ 425.-

Avalon U5 Mono

Instrument DI preamp

Pure Class A technique, low noise, +30dB variable gain, 6 tone presets (EQ), high-frequency filter, speaker level input, signal LED, balanced mic & line outputs, dimensions: 2U x half rack width.



order code 156661

€ 509.-
£ 461.-

TL Audio Ebony A4

Discrete class A 16:2 summing mixer

Dual triode ECC83 tube stage in master section, variable drive control, ability to switch tube in and out of circuit path, 16 balanced ins (TRS/D-Sub), 16 individual pan controls, switchable ins (+4V/-10), balanced inserts on master bus, balanced outs, analogue VU metering with peak LEDs, sleek design and smooth precise sound, dimensions: 19"/2U



order code 220634

€ 839.-
£ 760.-

Peavey Q1311

31-band equalizer

Constant Q factor, 1/3 octave, switchable 6dB or 12dB, 40Hz low cut feature, frequency range: 20Hz to 20kHz, XLR and 1/4" TRS inputs and outputs, output LED display, dimensions HWD: 4.4 x 48.3 x 18.7cm (19"/1U), weight: 3kg.



order code 238485

€ 45.-
£ 41.-

the t.racks EQ-233 IE

2x 30-band equalizer

20Hz - 20kHz, status LEDs, volume control per channel, low cut filter on each channel, balanced 1/4" Jack and XLR I/O, ±12dB, 19"/2U.



order code 235291

€ 75.-
£ 68.-

the t.racks EQ-1215E

2x 15-band EQ, 25Hz - 16kHz, low cut 10 - 250Hz on each channel, range: ±6dB and ±12dB, 19"/1U.

order code 235290

€ 55.-
£ 50.-

Lexicon MX200

Stereo effect processor

2 independent processors, 24bit converter, VST plug-in architecture with USB interface, MIDI interface, tap-delay bottom, legendary Lexicon algorithm like: halls, chambers, plates, delays, chorus, flanger, tremolo, rotary, etc., dbx dynamic algorithm, 2 simultaneous useable effects, analog and digital ins and outs, internal power supply, 19"/1U.



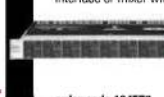
order code 180403

€ 188.-
£ 170.-

Behringer ADA8000

8-channel AD/DA converter

8 mic preamps with phantom power, 24bit AD/DA, 44.1 & 48kHz, Wordclock or ADAT-In sync, ADAT I/O, ADAT in can be routed to line outs, mic and line inputs are routed to ADAT out, excellent expansion for DDX 3216 or any interface or mixer with ADAT I/O.



order code 164573

www.thomann.de

Telephone Hotline: +49 9546 9223-55

Fax: +49 9546 9223-24

The Thomann services

- 30-day money back guarantee
- free shipping to the UK and Ireland on orders above £159

AKG K-121 Studio

Stereo headphones

Semi-open dynamic headphones, 55 Ohms rated impedance, 200mW maximum input power, frequency range 18Hz to 22.5kHz, 101dB/V sensitivity, self-adjusting headband and auto-shut-off feature, single side jack, incl. 3m cable with 3.5mm stereo mini-jack plug, 1/8" to 1/4" screw-on adapter, weight: 220g (without cable).



€82.-
£74.-

o. code 219545

Sony MDR-7506

Professional headphones

Closed back, 63 Watts, 106dB, 1/4" and 1/8" jack connectors, compact, designed for professional DJ and studio use.



€115.-
£104.-

order code 135709

AKG K271 MKII

Closed dynamic studio headphones

Circumaural design, 550, max. input power 200mW, 16Hz - 28kHz, sensitivity 104dB/V, self-adjusting headband and auto-shut-off feature, cable length 3m, incl. 5m coiled cable and 1 pair velvet pads, weight: 240g, incl. gold plated 1/8" to 1/4" screw-on adapter.



€145.-
£131.-

order code 206951

5m extension cable
Stereo jack 6.3mm.
order code 153216 €1030
£930

Sennheiser HD25 C II

Professional DJ headphones

Dynamic, 700 impedance, 120dB SPL, 16Hz-22kHz (-3dB), closed system. Includes coiled cable with stereo mini-jack, 1/4" TRS adapter, additional velour ear pads, soft bag and Traktor 3 LE software. Weight: 140g



€169.-
£153.-

order code 117063

AKG K 701

High-end reference headphones

Revolutionary flat wire voice coil technology, dynamic, open back, impedance 62Ω, efficiency 105dB, frequency range 10Hz - 39.8kHz, max. input power 200mW, hard gold plated 1/4" jack plug, 3m cable, weight: 235g (not including cable).



€199.-
£180.-

order code 185476

M-Audio StudioPro 3

Active 3" desktop studio monitor system

2-way desktop reference monitor, 3.25" low frequency driver, 1" high frequency driver, 10W/Kanal, frequency response: 100Hz - 20kHz, magnetic shielding, bass boost switch, incl. stands, dimensions HWD: 20 x 14 x 15cm, weight: 4kg. Pair price!



€64.-
£58.-

order code 186629

KRK RP5 Rokit G2 SE

Active studio monitor

75W, 5" + 1" speaker, frequency response: 53Hz - 20kHz, magnetically shielded, dimensions HWD: 27.6 x 18.5 x 25cm, weight: 6.3kg. Unit price!



€135.-
£122.-

order code 240101

Mackie MR5

Active nearfield monitor

5.25" woofer (100W), 1" tweeter (50W), frequency response: 60Hz - 20kHz, max. SPL per pair: 113 dB SPL @ 1m, XLR, jack (6.3mm) unbalanced and RCA, magnetically shielded, dimensions HWD: 29.2 x 19.7 x 26.6cm, weight: 6.5kg. Unit price!



€139.-
£126.-

order code 207239

Yamaha HS50M

Active 2-way studio monitor

70W Bi-Amping bass reflex system, 5" woofer, 3/4" tweeter, frequency range 55Hz to 20kHz, inputs XLR and TRS, adjustable input level mid EQ, room control, high trim, switchable low cut, fully magnetically shielded. Unit price!



€144.-
£130.-

order code 186461

ESI nEar05

Active 5" studio monitors

Magnetically shielded, 33Hz - 22kHz, bi-amped, bass: 42W, treble: 33W, balanced XLR input, 6.3mm jack input, dimensions: 25 x 16.6 x 20cm. Pair price!



€169.-
£153.-

order code 160180

KRK RP6 Rokit G2

Active studio monitor

6" + 1", 100W, bi-amplified, frequency response: 49Hz - 20kHz, magnetically shielded, dimensions HWD: 21.1 x 22.5 x 29cm, weight: 11kg. Unit price!



€185.-
£168.-

order code 213034

KRK RP8 Rokit G2
8"/1", 140W. Unit price! €229.-
£207.-

order code 213090

Yamaha HS80M

Active 2-way monitor

120W bi-amping bass-reflex system, 8" woofer, 1" tweeter, frequency range 42Hz to 20kHz, XLR and jack input, mid EQ, room control, high trim, low cut switchable, magnetically shielded. Unit price!



€225.-
£204.-

order code 186463

M-Audio EX66

Active studio reference monitor

Bi-amplified with 200W PWM power per channel, high-impedance analog inputs (XLR and 1/4" TRS balanced), S/PDIF and AES/EBU digital input up to 24bit/192kHz for total digital studio connectivity. Unit price!



€258.-
£234.-

order code 190176

Adam A5 Pro

Active nearfield monitor

5.5" woofer, 2x 25W, magnetically shielded, frequency response 55Hz to 35kHz, inputs balanced XLR and unbalanced RCA, dimensions: 28.5 x 17.2 x 20cm, weight: 5kg. Price per unit!



€258.-
£235.-

order code 207900

Genelec 8020BPM

Active 2-way studio monitor

Power switch, frequency response 66Hz - 20kHz (±2.5dB), 105dB SPL peak @ 1m, 95dB SPL @ 1m, 105mm (4") high efficiency bass driver, 19mm (3/4") metal dome tweeter with Directivity Control Waveguide, 3kHz crossover, magnetically shielded, aluminium cabinet, power per channel: 20W (bass), 20W (treble), dim.: 22.6 x 15.1 x 14.2mm, weight: 3.7kg, wall bracket included. Unit price!



€279.-
£253.-

o. code 235038

Adam A7

Active nearfield studio monitor

6.5" Rohacell / kevlar sandwich woofer, A.R.T. tweeter, frequency range 46Hz to 35kHz, 100W (sine), 150W (rms), XLR and RCA input, dimensions: 18 x 33 x 28cm, weight: 8kg. Unit price.



€379.-
£343.-

order code 193268

Genelec 8040APM

Active 2-way studio monitor

48Hz - 20kHz free field frequency response (±2dB), 115dB SPL peak per pair with music material @ 1m, 165mm high efficiency bass driver, 19mm metal dome tweeter with DCW (Directivity Control Waveguide), 3kHz crossover, magnetically shielded aluminium construction, amp power per channel: 90W bass + 90W treble, dimensions: 35 x 23.7 x 22.3cm, weight: 8.6kg. Price per unit! €744.-



€744.-
£674.-

order code 171716

Focal Solo6 Be

Active 2-way studio monitor

frequency response: 40Hz - 40kHz (±2dB), max. SPL: 113dB (peak @ 1m), Bi-amping: LF stage 150W (RMS), HF stage 100W (RMS), LF Focal 6W4370 6.5" speaker, HF Focal T8E Pro Inverted Beryllium dome tweeter, magnetically shielded, dimensions: 24 x 29 x 33cm, weight: 11kg. Unit price!



€811.-
£700.-

order code 195940

JBL LSR 4328PAK

Active studio monitor bundle

Includes LSR 4328P and LSR 4300 ACC, 8" woofer 150W, 1" tweeter 70W, with room mode correction technology, analyses room frequencies and trims the speakers, frequency response: 50Hz - 20kHz, max. SPL: 112dB, ins. XLR and balanced plug, AES/EBU (XLR) and S/PDIF (COAX), USB data connection, HiQnet network, incl. accessory kit (microphone, remote control, software and USB cable).



€1295.-
£1164.-

order code 195301

Event Opal

Active nearfield monitor

Frequency response: 35Hz - 22kHz, crossover frequency: 1600Hz, acoustic output - SPL @ 1m: peak (80Hz - 20kHz) 114dB, signal input: combo XLR, 1/4" TRS (bal/unbal), low frequency transducer neodymium 7.1" 270W, high frequency transducer Neodymium 1" 100W, dimensions WHD: 29.5 x 45 x 27.3cm, weight: 21.2kg. Unit price!



€1322.-
£1198.-

order code 234475

Behringer DJX 750

5-channel DJ mixer

24bit digital effects, BPM counter with time and sync display, Ultralight faders, XPO stereo surround effects, 3-band kill EQ, 3-way kill switch, monitor function with master/cue balance control and split option, auto talkover.



€179.-
£162.-

order code 223751

Allen & Heath XONE:22

2-channel DJ mixer

4 inputs, 2 mic inputs, 2 phono/line switchable, 3-band EQ, crossfader curve, VCF filter (20Hz - 20kHz), FX send/return, mic input (XLR) with 2-band EQ, XLR master output, monitor output.



€279.-
£253.-

order code 223386

Pioneer DJM 400

Professional DJ mixer

2 channels, mic/aux switch (to select 2 mic inputs or 1 stereo line input), fader start, crossfader curve adjustment, talkover (-20dB), peak level meter.



€477.-
£432.-

order code 191081

Allen & Heath XONE:42

4-channel DJ mixer

2 turntable ins (RCA phono RIAA), 2 line ins, X-FX send, 3-band EQ, 60dB total-kill EQ on all channels, internal switch-mode PSU, 2 headphone outs (1/4" and 3.5mm), VCA crossfader with curve control, VCF filter with independent I/O, resonance & frequency controls, USB 1.1 port (stereo I/O), XLR mic in with 2-band EQ and level control, finish: black.



€649.-
£588.-

o. code 231622

Pioneer DJM-700

Professional 4-channel DJ club mixer

Crossfader assignment, fader start, 3-band EQ (-26dB to +6dB), talk over (-20dB), peak level meter, rotary pots for master output. Dimensions: 32 x 38.1 x 10.8cm (WxHxD). Weight: 7.5kg



€819.-
£742.-

Finish: Black
order code 118996
Finish: Silver
order code 118965

Swissonic CDMP I

Compact CD/MP3-Player

40 seconds anti-shock, pitch ±16%, loop function, slot-in drive, balanced XLR output, direct headphone output with volume control, master level for the line output, IR remote control, 19"/1HE.



€139.-
£126.-

order code 221521

Denon DN-D4500

Twin CD player with MP3

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**THE
BEGINNERS'
GUIDE TO**

MIDI SEQU



AND JENNCING

It's one of the most important concepts in computer music, and it's not as scary as you might think – let's get to grips with MIDI

If you make music on a computer, then you're inevitably going to come across the acronym MIDI, standing for Musical Instrument Digital Interface.

MIDI is a 'language' that computers and electronic instruments (such as keyboards, drum machines and synthesisers) use to communicate. When you play a music keyboard and record its MIDI output, you're not capturing the actual sound the instrument makes, but rather the performance – a list of what notes were played and when, how long they were held for, how hard they were pressed and so on. It's only when a MIDI keyboard or recording is connected to a sound generator such as a

synthesiser that any sound will be heard, as the synth reads through the performance information and outputs sound accordingly.

Of course, if you play a MIDI keyboard straight into a synthesiser or, more likely, a computer with a virtual synthesiser on it, all this will happen pretty much instantly, so it'll feel like you're playing a real, 'live' synth. If you're recording, however, because only playing information is recorded, rather than sound, you can change the sound after the event by sending the MIDI data through whatever sound source you like – a synth, a sampler, etc.

What's more, because the computer stores every detail of the performance separately, you

can delete wrong notes, change chords and even alter the timing after the track has been recorded, just by clicking on notes and dragging them around. This makes MIDI very flexible.

You can think of MIDI like a modern-day equivalent of the old player piano – those music machines that read sheets of paper with holes punched in them. The length and position of the holes instructed the player piano as to which note to play and how long to hold it for, so these rolls were the mechanical predecessor of MIDI – in fact, the term 'piano roll' is still used in MIDI sequencers today to refer to the standard MIDI editing window.

So that's what MIDI is – but how does it work?

MIDI – the technical details

Before we start using MIDI, let's take a quick look at the details. This is just a brief overview of how MIDI works – most of the time, all the things we're about to

discuss will happen behind the scenes, without you having to really worry about them. However, it's still good to have some knowledge of what's going on.

MIDI event messages

The MIDI 'language' that MIDI-capable instruments use to communicate is made up of MIDI 'messages'. Every time you play a key on your MIDI keyboard or your music software reads a MIDI note, a message is

transmitted. These messages contain instructions that tell another MIDI-capable device (usually a sound generator, such as a synth or sampler plug-in) what to do.

MIDI messages are the same whether you

play them on a keyboard or click them into the MIDI editor of your DAW software, but we'll look at the keyboard example here, as it's probably the easiest to explain by way of illustration...

Note On, Note Off

When you play a note on your keyboard, it sends a Note On MIDI message. This chunk of data simply tells whatever your keyboard is plugged into (say, for example, a synthesiser plug-in on your computer) what note was pressed and how hard it was played (known as Velocity – see the next column, right). When you let go of the key (whether after five milliseconds or five minutes), another piece of information is sent called a Note Off message, which simply tells the synth plug-in that it should stop playing that note.

As we said before, all of this stuff happens behind the scenes, and when recording MIDI into a computer, you'll just see one note on the screen, with clear start and end points, rather than two separate messages for Note On and Note Off.

So, if you're playing a part requiring a range of different note lengths, such as a synth lead, you'll soon see why the Note Off message is important. Drum sounds, on the other hand, don't generally need Note Off messages – after all, you can't hold a snare drum sound.

Velocity

Velocity is a measure of how hard a note has been played on your MIDI keyboard – with the vast majority of sound generators, such as samplers and most preset synth patches, you'll find that this directly corresponds to how loud the note sounds.

What's more, with many synth and sampler patches, velocity affects the actual sound as well as the volume of the note depending on the velocity. This is most noticeable in those plug-ins and patches that are designed to replicate real instruments, which will usually be set up to sound different when they're played hard to how they sound when played softly – just like the instruments they're emulating.

As with the majority of MIDI messages, Velocity ranges from 1 for the quietest note to 127 for the loudest. This range is actually common to all MIDI messages that aren't just Note On or Note Off.

For obvious reasons, Velocity messages are crucial for recording an expressive MIDI performance and replicating real instruments with wide dynamic range and a variety of timbres.

Other messages

As we've hinted at in the Velocity column, MIDI isn't just about notes – there are a range of other things that can be done with the protocol, and, in fact, anything you do on a MIDI device will be sent out as a MIDI message, including moving any of those faders and knobs that most MIDI controller keyboards come equipped with.

Most of these other messages will be MIDI Continuous Controller messages (also known as MIDI CCs), which can be used to control all manner of software parameters, from a plug-in synth's filter cutoff frequency to a DAW mixer's level faders.

Many MIDI CCs are set to standardised values across all products. The modulation wheel on any MIDI keyboard, for example, sends out MIDI CC number 1, while your sustain pedal undoubtedly transmits CC 64. Once again, you don't actually need to memorise these CC numbers: the computer will just do it for you; and as mentioned earlier, MIDI CC's have a range of 1 to 127, to be translated by the software as appropriate to the parameter being controlled.

MIDI channels

Finally, it's also worth noting that MIDI devices have 16 MIDI 'channels' available to them. These channels enable, for example, a sequencer to output different parts to different sounds at the same time, or a keyboard to trigger different patches in a multi-timbral instrument (simply, a synth or sampler with several patches loaded at once).

MIDI channels used to be a vital consideration in electronic music production, although they aren't used much at all nowadays. This is because music software does away with the limitations of old hardware that made multi-channel MIDI necessary. However, you may still need it in when using the aforementioned multi-timbral instruments, such as an orchestral ROMpler plug-in, for example.



Multi-timbral instruments such as IK Multimedia's Philharmonik still require the use of separate MIDI channels

A brief history of MIDI

During the 70s, the electronic instrument market was booming. New synths and keyboards were being released left, right and centre, and if you were a serious synthesist, you'd make sure you had the newest and most out-there sounds available. Of course, the sounds were, in most cases, physically linked to the keyboard of the synth in question, and what few formats existed to link keyboards and sound modules together were non-universal and incredibly unreliable.

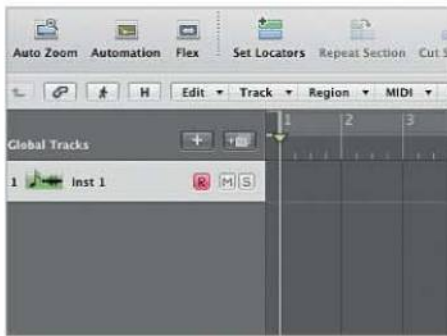
This led to synthesists in bands appearing behind walls of keyboards, affording them access to all of their sounds but completely hiding them from the audience.

In 1981, engineer Dave Smith (who had already invented a pioneering synth in the Sequential Circuits Prophet 5) proposed a new way of linking electronic instruments together – a technical specification that all manufacturers would follow to enable the keyboard of any equipped instrument to

drive any equipped external sound module. In 1984, MIDI was born. In 1985, the Atari ST became the first home computer to ship with MIDI ports – and early MIDI software packages such as Cubase and Notator (now Logic) are still going strong today, albeit in radically improved forms. Over the years, there have been numerous tweaks and upgrades made to the MIDI specification, but the core of it is still the same after over two and a half decades. How's that for longevity?

> Step by step

Using a piano roll editor to draw in a MIDI pattern



POWER TIP

> Loud and clear

By audio output, we simply mean something you can hear. Dedicated MIDI tracks only deal with MIDI data, which you then have to send out to another track with a sound module loaded before you can hear anything. Instrument tracks pack these two into one so you don't have to worry about routing. Most modern software packages feature instrument tracks, although a few still only use the 'two separate tracks' method. See the *MIDI routing* boxout for more on this.

1 > Let's create a basic drum beat with MIDI. We'll program a groove using a piano roll editor, then send the notes to a sampler plug-in with a drum kit patch loaded. A piano roll editor is a way of representing music onscreen and you'll find yourself using one for most of your MIDI-involved time. We're using the one in Logic Pro, but they all work in much the same way, no matter which DAW you use.

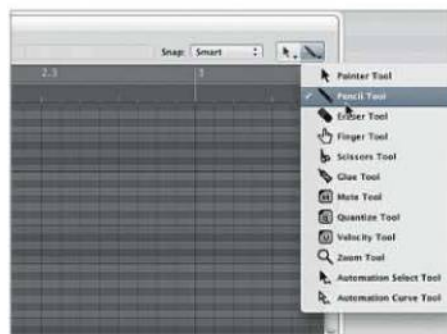
2 > In Logic Pro, go to **File > New...**, then select **Empty Project** from the **Explore** collection. You'll be greeted with a dialog asking what tracks you want. The default is one software instrument track - click **Create**. This software instrument track type combines MIDI input with audio output.



3 > For a sound source (the device that's going to read our MIDI data and give us some music from it), we're going to use Logic's EXS24 sampler. To load up this plug-in, click and hold the box just below the **I/O** label in the mixer section on the left, then choose **Stereo** under the **EXS24 (Sampler)** submenu.

4 > With EXS24 loaded, we can choose a drum kit patch. You can load up any kit you like (Logic ships with a few of its own), but we're going to use a Garageband patch. Click and hold the three green dashes in the display on the central panel to bring up the list, navigate down to **Garageband**, then select **Hip Hop Kit**. Now close the EXS24 window.

5 > Most music applications work with data objects called 'regions' or 'clips'. These are visual 'containers' for MIDI and audio that enable you to see where everything is in your track. They also make it easier to drag grouped sets of notes around. In Logic, create one by right-clicking the empty space underneath bar 1 in the **Inst 1** track, and selecting **Create Empty MIDI Region**.



6 > Double-clicking the new region will bring up the piano roll editor. A piano roll is a simple chart of notes against time, with a piano keyboard displayed up the side, and bars and beats along the top. You'll notice that the notes on the piano are numbered: middle C is called C4, because it's the fourth C up on a standard 88-key keyboard.

7 > In the top-right of Logic Pro's piano roll window are the tools: two boxes, one of which will probably be a pointer, the other a pencil. If they aren't, click and hold each one and select a pointer for the left box and a pencil for the right. The box on the left is the tool used when you click, whereas the tool on the right is the tool used when you **Cmd**-click.

8 > Try clicking the notes on the piano keyboard on the left-hand side - the different notes trigger different drum sounds. You'll notice that the note lanes are shaded differently: white note lanes are a slightly lighter grey than black note lanes. Let's click some notes in. Scroll down until you get to C1 and click the piano key. This is a kick drum on almost all drum kit patches.



Once upon a time, MIDI meant MIDI cables - lots and lots of MIDI cables. These days, it's all done virtually, in software

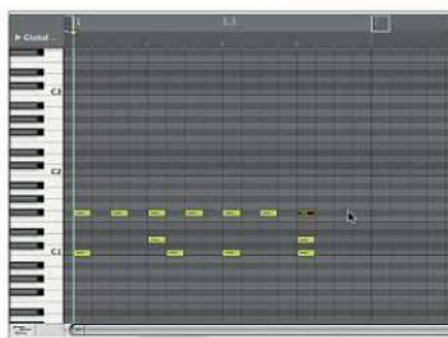
MIDI routing

In the walkthrough, we briefly discussed instrument tracks and how they negate the need for separate MIDI and audio tracks, inputting MIDI and outputting sound by combining the two in one place. However, some DAWs don't feature dedicated software instrument tracks, meaning you need to create a MIDI track onto which all your MIDI data is recorded, then create a separate type of track (often labelled an Auxiliary track) to house your sound source (be it a plug-in synth, sampler or whatever). To link the two together, you have to either route the MIDI output of the MIDI track to the MIDI input of the Auxiliary, or tell the Auxiliary to take its MIDI data from your MIDI track. The actual process of doing either of these is pretty simple - in most software DAWs, the settings for a track's inputs and outputs are located just above the fader and pan controls on its mixer channel strip.

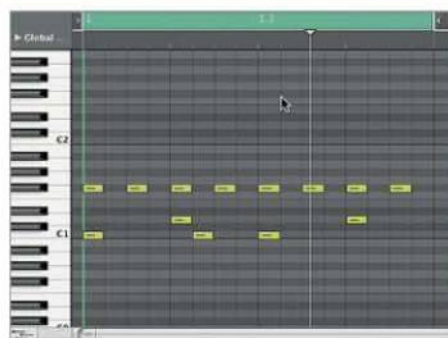
If your music software enables you to tell a sound source where to take its MIDI input from, this affords you some interesting routing possibilities. For example, you could tell two different synths to both play the notes from the same MIDI track to create a layered sound.

MIDI routing is easier to understand if you try to picture it in physical terms, just as was literally done in the days of hardware, when synths and samplers were physical boxes rather than software plug-ins. Separate bits of MIDI hardware need to be connected together with MIDI cables. For example, a MIDI controller keyboard is simply for playing notes and contains no sound generator of its own. To get some noise out of it, you have to take a cable from its MIDI Out port and plug it into the MIDI In port of a synthesiser. With a MIDI splitter cable, you can even take a MIDI output and plug it into two different synth modules, just like the software example cited above.

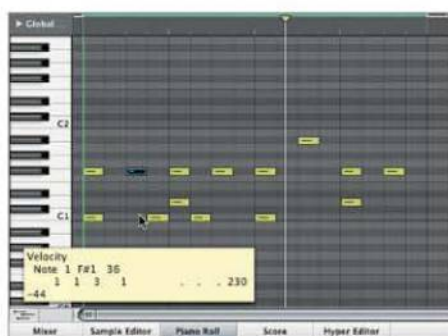
> Step by step Using a piano roll editor (Continued)



9 > To add a note, hold down the **Cmd** key and click the C1 lane at bar 1, beat 1. Don't worry about the note's duration. Carry on and create a whole drum groove by **Cmd**-clicking notes in: you'll probably find the snare on D1 and the hi-hat on F#1.



10 > When you press play, you'll hear your groove. The software is sending the notes to the EXS24 as they occur, and the EXS24 is outputting the sounds assigned to the notes within it as it receives them. Remember: with the vast majority of drum samplers, it doesn't matter how long the notes are, as the Note Off message that's sent at the end of the note is ignored.



11 > Of course, we haven't changed the velocities of any of our notes yet - they're all set at the default value. To do so, you can use the velocity tool (click and hold a toolbox in the top-right to select this). Click and hold a note with it, then drag up or down to change its velocity.



12 > Let's try another instrument - one with which the Note Off message comes into play. Create a new Instrument track by clicking the + button above the track list, and load up Logic's electric piano plug-in, the EVP88. Create an empty MIDI region as before, then double-click it to open the piano roll editor.



13 > This time when you're adding notes, try clicking the right-hand edge of one and dragging it to the right - the note will become longer. When you play your track back, the note will be held down until the end of the rectangle you've just drawn. Logic sends a Note Off message at this point, cancelling the held note.

POWER TIP

>Duly noted

To the right of Logic's piano roll is the Event List (Select **Window > Event List** if it's not there). This is a numerical display of every event that occurs - in this case, it's simply a list of what notes are played and when, their velocity (the **Vel** column) and their length. You'll notice a lack of Note Off messages because **Note On/Off** is kept hidden for simplicity). The Event List is useful because you can click and hold on values, then drag up and down to alter them, giving you a very fine degree of control.

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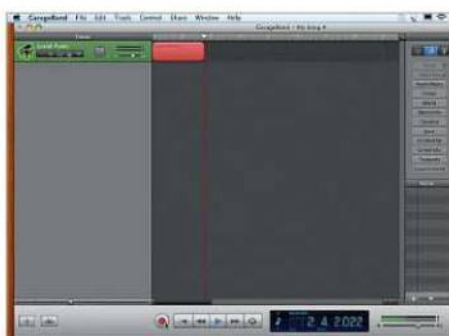
> Step by step Using a MIDI keyboard



1 > Using a MIDI keyboard to control your music software is easy and fun. First, of course, you're going to need a MIDI keyboard. You can get a decent one for well under £100 and to help you out, there's some buying advice on the next page. We're using an E-MU Xboard 49 here, which is a basic four-octave USB model.

2 > So what's it got to do with USB? Well, MIDI devices normally use MIDI cables to talk to each other - leads that can only send data one way, meaning that if you wanted to do something more advanced, you'd need two cables to enable two devices to communicate in both directions. Nowadays, most MIDI keyboards send their MIDI data over USB, which is much simpler. Let's plug in.

3 > If you're using Windows, the operating system should automatically look for the correct keyboard drivers when you first plug it in. If it doesn't, consult your keyboard's manual. OS X should also install your keyboard - probably invisibly. Load your music software - we're using GarageBand '09. If you're a Windows user or don't have GarageBand, you'll find most music apps treat keyboards the same way.



4 > With Garageband loaded, select **New Project** and **Piano**. Once you've chosen a location for your song, you'll have an empty session to play with - save for one Piano track. The Piano track here is like the instrument tracks we saw in the previous tutorial - it handles MIDI data on the way in, but outputs audio straight to the master channel and your speakers.

5 > Now let's get some sound out of the piano. If it's not active already, click the little grey circle (the record arm button) just to the right of the piano icon. When you play your keyboard now, it should work just like a real piano! Record some MIDI by clicking the **Record** button on the transport bar at the bottom. Note that you can turn off the metronome by holding down the **Cmd** key and pressing **U**.

6 > As you record your MIDI data, you'll see a region develop on the timeline. Double-click this region to bring up the piano roll editor, where you'll see all the MIDI notes you recorded: their positions, their lengths and their velocities. Click and hold the **View** menu in the piano roll to see any other playing information the computer recorded, including sustain pedal and pitchbend wheel movements.



7 > Because it's MIDI data, you can drag notes around wherever you like. This is useful for correcting mistakes. You can also change the sound. Bring up the track info sidebar by clicking the **i** button (the middle one of the three at the bottom right). Now you can change the sound by simply selecting a different instrument.

8 > You can improve the timing of any sloppily-played notes by snapping all notes recorded to the nearest of a specified time division. This is called quantisation, although GarageBand calls it **Enhance Timing**. It couldn't be simpler - you just select a time division in the menu in the piano roll editor. GarageBand also provides a slider for determining how much quantise to apply.

POWER TIP

>Out of time?

Be careful when using quantisation. Larger note length values will give more drastically quantised results. As useful a tool as it is, quantisation can suck the life out of your playing and make it sound too rigid - being in time is good, but humans aren't machines and very slight timing imperfections aren't always a bad thing. Because quantisation affects the whole selected region, it may be wiser to correct any dodgy notes manually by dragging them left or right, especially if you've only played a couple out of time.

> Step by step Taking control with knobs and faders



1 > The knobs and faders on your MIDI keyboard or dedicated MIDI controller unit offer a level of tactile real-time control that you just don't get using a mouse to adjust effect parameters. We're using Ableton Live here, but all DAWs offer the same kind of external MIDI control.



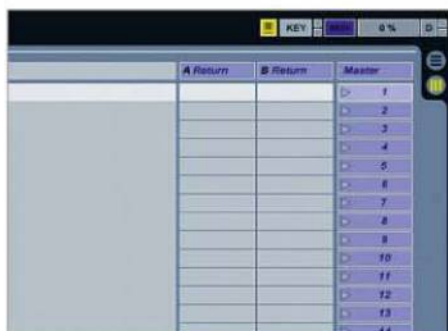
2 > The controller keyboard we're using, the E-MU Xboard 49, features a bank of rotary controls that we're going to use to control an effect. Most modern keyboards have at least a couple of these knobs onboard: check the boxout for some keyboard buying advice.



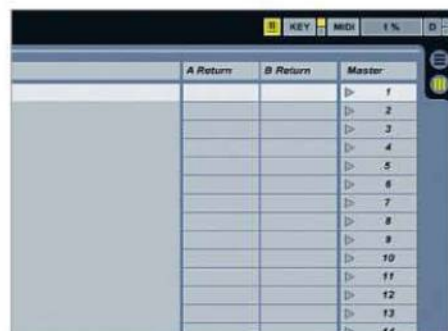
3 > With the keyboard hooked up via USB, we load Live's MIDI preferences pane (go to **Preferences** > **MIDI Sync**) to set up our MIDI input. Live has automatically recognised the keyboard here, so we can close the MIDI preferences. If your keyboard isn't visible, just select it from the **MIDI Input** drop-down menu and activate the **Remote** button.



4 > Now we need some audio to process with our effect. Simply drag any audio file from the Library on the left onto a new audio track. Now we can load up our effect - we're going to create a basic low-pass filter sweep (you'll recognise the effect when you hear it), so drag Live's Auto Filter plug-in in from the Devices pane.



5 > Next, we need to link our rotary control to the effect. To do so, click the **MIDI** button at the top-right of the screen to go into MIDI learn mode. All of Live's MIDI-controllable parameters will go purple. Click the desired parameter (in this case, the Auto Filter's **Cutoff** control). Finally, deactivate MIDI learn mode by clicking the **MIDI** button again.



6 > With MIDI learn mode still enabled, twiddle the knob on your keyboard that you want to assign to the **Cutoff**. And that's it! Your rotary control will now control the filter cutoff in real time. And remember: because MIDI captures every single performance detail, you can record your real-time effect tweaking and edit it afterwards.

Buying a MIDI controller keyboard

While clicking notes into a piano roll editor will get the job of MIDI input done, it isn't as spontaneous, creative and fun as using a real instrument. MIDI controller keyboards have no sounds of their own - they're designed to output MIDI data for the software on your computer to turn into sound.

There are a wide variety of MIDI keyboards on the market, across a broad range of specs, sizes and prices. Luckily, you can get one featuring all the knobs and faders you might need for well under £100.

The first thing to consider is size - ie, the number of keys. The shortest keyboards only have 25 keys (two octaves), but this should be more than enough if you're only going to be playing in basslines, synth leads and drum beats. Remember - you can always use the octave shift keys on your keyboard on-the-fly to access a wider register (range of note

itches). Such a portable instrument may prove useful for live use, too. A great example is the M-Audio Oxygen 8, which has eight knobs and a street price of around £80.

Going further down the portability route, new 'nano'-sized keyboards have found favour with laptop musicians, with smaller keys to give an ultra-small footprint. Korg's nanoKey and Akai's LPK25 cost around £45.

Of course, you can always go for a full-on, 88-key MIDI controller if you're a trained piano player. M-Audio's Keystation 88 ES is



The CME UF80 might be expensive, but it packs a huge array of useful control features

around £150 and packs 88 keys, although it doesn't feature any rotary controls or faders, and the keys are semi-weighted, meaning they respond similarly to a piano. If you want hammer action keys (which get you even closer to the feel of a real piano), you're going to have to fork out a bit more still. CME's UF80 is around £400, but also packs eight faders, eight rotaries and an aluminium body.

You should also check whether or not the keys output velocity data. Some smaller keyboards don't and are thus worth avoiding.

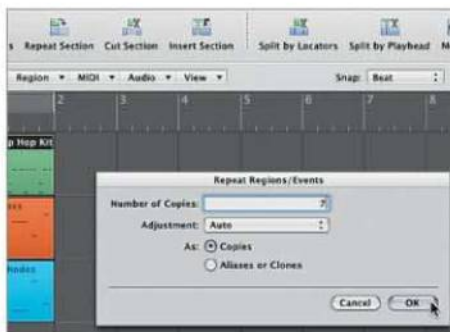
> Step by step Working with MIDI regions



1 > If you've followed our piano roll editor walkthrough, you'll already be familiar with regions - the containers that music applications use to organise MIDI data. Knowing how to work with regions is crucial to building a MIDI-led track, so we're going to look at them here in more depth. We're using Logic Pro again, but region functionality is essentially the same in all apps.

2 > Let's say you've created a one-bar drum beat and you want to expand it into a two-bar groove. Simply click and drag the bottom-right corner of the region to the right, until you get a two-bar region, then double-click it to edit it in the piano roll window. In the piano roll, copy your notes across by dragging a box around them, and **Alt**-dragging to the desired location.

3 > This **Alt**-drag functionality also works with whole regions. Let's try it in Logic Pro - go back to the main sequencer window and **Alt**-drag your region to the right, until you get two regions. You can then drag a box around the two regions and **Alt**-drag those so that you have four regions, then **Alt**-drag those until you have eight...



4 > Rather than forever **Alt**-dragging, though, you can repeat a region a set number of times by **Ctrl**-clicking it, selecting **Edit > Repeat Regions...**, then entering the number of repetitions you want. This is an easy way to get a drum beat rolling throughout your entire song, for example.

5 > If you repeat a region, each copy exists independently of the others. So, if you edit the drum beat in the bar 1 region, you'll have to repeat the region again to change the whole song. But if you click and drag the top-right corner of a region in Logic Pro, you can loop it a set number of times, meaning that any changes in the looped region will also affect its copies.

6 > These repeat and loop functions work across multiple tracks, too. This makes it easy to change the length of an entire section with just a few mouse clicks. Simply drag a box around the regions you want to repeat to select them, then either right-click and choose **Repeat Regions...** or drag the top-right corner as before. Of course, good ol' copy and paste will work just as well, too.



7 > With all these repeated regions knocking about, it can sometimes make things easier to merge MIDI data across multiple regions into one large region. To do this, select your **Glue** tool, select the region at the start of where you want to merge, then **Shift**-click the region at the end.

8 > You can also split large regions into sections. Simply select the **Scissors** tool, then click the region at the point you want to cut it. You'll be left with two MIDI regions. Bear in mind that these will sometimes overlap if you've tried to split a long note - rather than cut a note in half to create two smaller ones, Logic usually splits the region after the note finishes.

POWER TIP

> Snap to it

Moving, splitting, adjusting the start and end boundaries of a region, and, in fact, most other editing functions are helped along by snapping. Snapping assumes that you normally want to edit to the nearest bar or beat rather than an arbitrary point along the timeline, making editing a far less fiddly process. In Logic, you can adjust the division that snapping jumps to in the **Snap** menu, or edit with more precision by clicking and holding, then holding down **Ctrl** (or **Ctrl+Shift** if you want to get really intricate).

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Humanising tips

INSTRUMENTAL

Key to getting a human-sounding part is thinking like an instrumentalist would. Being able to play it helps immensely, but if you can't, try to at least get a basic knowledge of how it's played.

EASY DOES IT

Don't overdo it! The human ear is incredibly sensitive to volume changes and even more sensitive to timing. You only need to make tiny tweaks to drastically improve the feel of your music.

AUTO PILOT

Don't overuse automatic humanise functions. They're simply randomising functions to add imperfection - they don't emulate the feel that a real player has. Be careful not to let them wreck your painstakingly tweaked parts right at the end, either.

BLOCK PARTY

Block chords on keyboard parts often sound too... well, blocky. Spreading the note timings very slightly can help soften them up.

SPOT ON

Be aware of flams. Flam is a drumming word for when two notes are played at almost (but not quite) the same time. Having your hi-hat occur slightly after a snare, for example, doesn't sound human - it just sounds sloppy. Try to get any drum hits that occur on top of each other to be pretty much dead on.

TERMINAL VELOCITY

Velocity levels can be used by samplers to change sounds depending on how hard the note is played. This helps to make things more realistic, but because there's sometimes a hard jump between one velocity level and another, a note with a velocity of 88 may sound very different from one of 89. Use your ears and listen carefully for notes that seem to 'jump out' where you don't want them to.

MAKE A CHANGE

If using a humanise tool, apply it to a long section, rather than one bar that will then repeat. This will give more variation, as every bar will be different from the last.

DRUM MACHINE

Don't humanise everything. Whether you need to make a part human or not depends on the genre - you wouldn't do it to an electro pop drum track, for example.

> Step by step

Humanising MIDI for 'realism'



1 > One of the great things about MIDI is that you can program parts for instruments that you might not be able to play yourself. But parts that are drawn in or quantised can sound overly rigid or robotic. It's easy to get things sounding realistic, though. We're using Logic Pro here, but there are similar functions in most other DAWs.



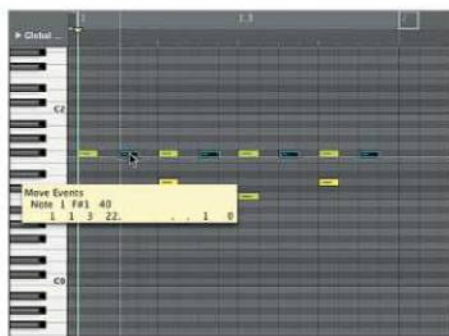
2 > Drum parts are the worst offenders when it comes to rigidity. Here we're working on a standard 4/4 rock drum pattern, featuring a constant 8th-note hi-hat pattern. You'll find a MIDI pattern (**Rigid-Drum-Beat-Raw-MIDI.mid**) on the DVD in **Tutorial Files/The Beginners' Guide to MIDI**, which you should load onto an instrument track with a drum kit sound loaded by choosing **File>Import**.



3 > When it comes to humanising, we have three things to play with: how in time (early or late) each note is, how long each note is held for (not relevant for drums, of course) and how loud each note is (velocity). Let's kick off by reducing every other hi-hat's velocity from 80 to 40, to give the track some bounce.



4 > Already our drum part sounds more human. Let's go further with velocity editing to make the snare drums and the kick on beat 1 louder (set the velocity to 90) and the second kick drum (the offbeat one) quieter (velocity of 50). Our drum track is now sounding more like how a real drummer would probably play it.



5 > No human drummer has perfect timing, so a snapped-to-beat MIDI drum part can sound too robotic. We're going for a lazy hip-hop vibe here, so let's make every other hi-hat (same ones as last time) a bit late to add a touch of swing. Select all four, click and hold on them, then hold **Ctrl** to override snapping and drag to the right a couple of pixels. Do the same with the offbeat kick drum.

POWER TIP

>Random factor

Logic has a built-in humaniser that works by randomising timing, velocity and note length. Select all the notes you want to affect in the piano roll window, then click **Functions>Transform>Humanize**. We're going to randomise both note position and velocity here - we're happy with a level of 10 for each, so select **Operate Only**. Et voilà! A much more realistic part. Compare **Drum-Part-Rigid.aif** with **Drum-Part-Finished.aif** on the DVD and judge the results for yourself.

> Step by step

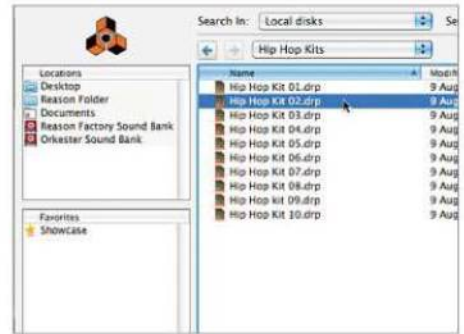
Using groove templates



1 > Here's an easy way to add feel to your MIDI parts. We're using Reason 4 here, but most music apps can apply groove templates to MIDI parts. A groove template is a MIDI file that's used to affect another piece of MIDI data. The computer looks at the groove template's swing, bounce and general feel, and applies it to a drum beat or other MIDI part without changing the notes themselves.



2 > Create a new song, then go to **Window»Detach Sequencer Window** to separate the rack (where our sound modules are housed) and the sequencer (where our MIDI data will be, once we've programmed some). Now load Reason's drum machine, Redrum, by right-clicking the empty area of the rack and selecting **Redrum Drum Computer**.



3 > Let's load a sound. Click the **Open** icon at the bottom left of Redrum, then select **Reason Factory Sound Bank** on the left. Open **Redrum Drum Kits**, then navigate to **Hip Hop Kit 02.drp**. Redrum loads the sounds into its ten channels - audition them by clicking the play button at the top of each channel. You'll notice that each channel now contains a different drum or cymbal.



4 > Redrum features a step sequencer. The line of 16 buttons at the bottom is where you program in your notes - the 16 'steps' each last for one 16th-note by default. The step sequencer section applies to the currently selected channel. At the moment, channel 1, with a kick drum sample loaded, is selected. Program a kick drum groove, by clicking steps **1, 2, 4, 7 and 8**. Hit **Run** to hear it.

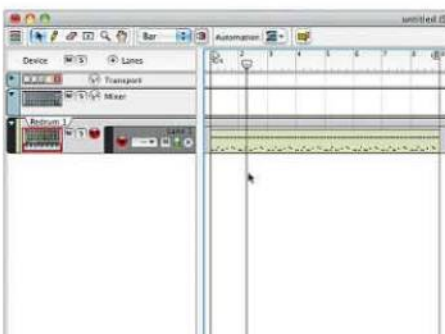


5 > Let's slow the tempo down to a relaxed hip-hop speed by setting the **Tempo** control at the bottom of the sequencer window to **74**. Now we'll finish our groove - add the kick drum from channel 2 (click **Select** at the bottom of channel 2) to steps **10 and 14**, the snare from channel 3 to steps **5 and 13**, and the hi-hat from channel 10 to every step. Now, that's more like it!

POWER TIP

>In the groove

Reason's ReGroove mixer is special - most programs only enable you to apply a groove template to a MIDI part as an edit, meaning once you've applied it, it physically moves the notes and changes their velocities. The ReGroove mixer, however, works in real time. You can drag the fader up and down to tweak how much the groove template affects the MIDI part and, if you change your mind, simply unassign the MIDI channel in question and the MIDI region will be just as it was to start with.



6 > Let's convert Redrum's step sequencer groove into MIDI data. This is easy - just right-click Redrum and select **Copy Pattern To Track**. Deselect **Enable Pattern Section**, too, so the two parts don't play at the same time. Now go to the sequencer window - you'll notice some regions in between the left and right loop markers on the timeline. Play the track - your groove is now playing from MIDI.

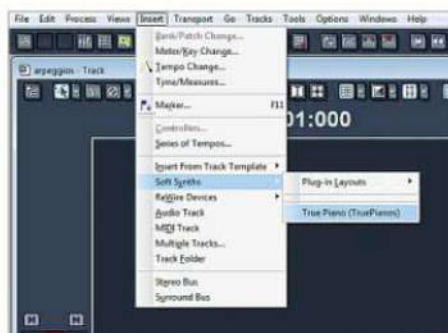
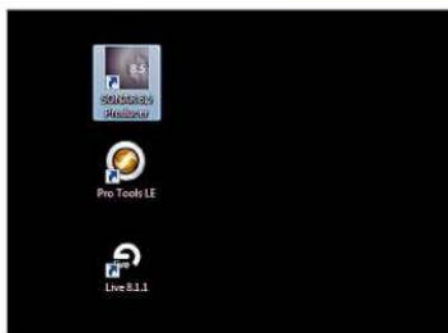


7 > Click the **ReGroove Mixer** button at the bottom right. The ReGroove Mixer features four banks of eight channels, each of which can contain a different groove template. Let's load one into **A1**: Click the **Open** button, then browse to **ReGroove Patches/Drummer/Vintage Soul-RnB/Personality**. Assign your Redrum channel to A1 using the menu to the left of the sequencer window.



8 > Raise the **A1** fader - the higher it goes, the more swing it adds. For subtlety, we're only bringing the fader up to **40%**. When you get more advanced, you can apply different groove templates to different instruments - just use your ears to make sure it all gels. Check out the Tool window, too - here you can adjust how much note velocity is affected by the groove template, among other things.

> Step by step Arpeggiators and other MIDI effects



1 > Effects aren't just for audio – you can get MIDI effects, too. For example, let's look at the arpeggiator, a feature found on quite a few hardware synths that's found its way into software. Arpeggiators spread or repeat the chord or note you're playing, creating an arpeggio. We're using Cakewalk Sonar here.

2 > With an empty session loaded in Sonar, create an instrument track by going to **Insert>Soft Synths**. Then choose an instrument – we're going for **True Piano**. In the next dialog box, leave **Simple Instrument Track** selected and click **OK**.

3 > Click the Maximise Strip icon at the top right and make sure the **All** tab at the bottom is highlighted. Now choose your MIDI keyboard from the MIDI input drop-down menu (select **MIDI Omni**), and you should be able to play the piano. (Go to **Options>MIDI Devices...** if your MIDI keyboard isn't showing up).



4 > Notice the **Arpeggiator** label on the right of the track controls? Click the little box to the left of the text and it'll turn green – this engages the effect. Now click the arrow on the right – this will give you access to all its options. Try holding a note or two now and listen to your arpeggiator in action!

5 > Have a play with the options until you get the effect you want. You can adjust the repeat rate, the octave range, the order in which the notes within a chord are played and more. Now hit record and see what happens when you play some notes in.

6 > You'll notice that the MIDI region is only showing the notes you played in and not the arpeggiated notes. This means you can change the settings of the arpeggiator, or even turn it off completely after you've recorded your triggering part.

More MIDI effects

The arpeggiator is a creative, fun tool that can really add some spark to your MIDI parts, but Sonar has other MIDI plug-ins, too, such as MIDI Echo Delay, which repeats the notes you play, much like an audio delay plug-in. Others are more pragmatic: the chord analyser can help you out if music theory isn't your forte; there's a MIDI event filter, which acts like a type of gate to only let certain MIDI events through; and Sonar has transpose and velocity-based tools, too.

Ableton Live also has powerful MIDI plug-ins built in, including Scale, which enables you to constrain your played notes to a musical scale, a randomiser, an octaver effect (which duplicates your notes an octave above where you play them) and more.

MIDI plug-ins are useful in a recording environment, but it's when using them live that they really come into their own. Arpeggiators,

for example, make it possible to play complex-sounding parts by just holding down a chord with one hand, leaving your other hand free to adjust rotary controls or tweak mixer settings. And because MIDI effects don't have to process audio, they don't use up much CPU power, leaving your processor free to deal with more complicated tasks.

Grand designs

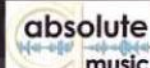
If you like the idea of using MIDI when you play live, you might want to check out a MIDI plug-in by Sugar Bytes called Thesys. It packs numerous features that you probably won't find in your standard music app. As well as being able to

"Because MIDI effects don't have to process audio, they don't use up much CPU power"

handle simple arpeggios, you can also program complex note sequences, controller changes (sent out to an audio plug-in such as a filter), pitchbends and more, which all then shift around depending on what note you play.

There's even software that enables you to create your own MIDI effects. Cycling '74 Max/MSP isn't for beginners (in fact, it's more like a programming language than a music app – albeit a fun one), but with a bit of work, you can get make mind-blowing things with it. **cm**

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Martin Eastwood Audio Duet (PC)

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discoDSP Discovery Pro R5 (PC/Mac)
IK Multimedia AmpliTube 3 (PC/Mac)
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Michael L Penman - Off

MARTIN EASTWOOD AUDIO DUET (PC)

This fantastic VST plug-in from Martin Eastwood Audio, developers of the cm Studio's CompressiveCM, used to cost €39, but is yours for free only with this issue of *Computer Music*. It's been designed to serve all your automatic double tracking needs, and is of particular relevance to guitar and vocal parts. It's easy to use and you'll find your full guide to getting started with it over the page.

System requirements

PC VST host

Web martineastwood.com

Double track your vocals and other lead parts quickly and easily with Martin Eastwood Audio's Duet



Demo software

112DB REDLINE PREAMP (PC/MAC)

Perfect for warming your tracks up in authentically analogue fashion, Redline Preamp is ideal for those who want to get better-sounding mixes with the minimum of effort. In the installer folder, you'll find a license that will authorise the product until July 12 2010 - follow the installation instructions provided in the **ReadMe** text file to get the software up and running.

System requirements

PC AMD Athlon 800+/PIII 850MHz/Intel 1.6GHz CPU, 256MB RAM, Windows 2000/XP/

Vista, VST/RTAS host

Mac G4 1.2GHz CPU, 256MB RAM, OS X

10.4/10.5, AU/VST/RTAS host

Web www.112db.com

COCKOS INCORPORATED REAPER (PC/MAC)

This awesome DAW is small but perfectly formed, featuring sophisticated audio and MIDI editing, as well as very powerful routing and processing capabilities. You can read more about it in *The cm guide to Reaper* on p76. This

trial version never expires, but you should purchase a license if you use it for more than 30 days or if you intend to use the program for commercial gains.

System requirements

PC Windows 98/WINE (for Linux users)

Mac PPC/Intel CPU, OS X 10.4

Web www.reaper.fm

D16 SILVERLINE PLUG-INS (PC/MAC)

In the **SilverLine demo** folder, you'll find all six of D16 Group's SilverLine plug-in demos, including Syntorus (reviewed on p100). They only work for 30 minutes at a time and have the recall capabilities of the full versions disabled.

System requirements

PC 1.5GHz SSE-capable CPU, 512MB RAM,

Windows XP/Vista, VST host

Mac Intel 1.7GHz CPU, 512MB RAM, OS X 10.4,

AU/VST host

Web www.d16.pl

DISCODSP DISCOVERY PRO R5

(PC/MAC)

This super synth from discoDSP is a veritable powerhouse, with 12 oscillators, sample



D16 Group's superb SilverLine Collection is yours to try out, including their latest: the Syntorus double-path chorus

playback functionality and a wealth of built-in effects. It's not possible to save any of your sounds in the demo version, though, and automation is disabled.

System requirements

PC SSE2-capable CPU, 512MB RAM,

VST/RTAS host

Mac G4 CPU, 512MB RAM, OS X 10.5,

AU/VST/RTAS host

Web www.discodsp.com

IK MULTIMEDIA AMPLITUBE 3

(PC/MAC)

The latest version of AmpliTube includes more than 160 pieces of virtual gear, new cabinet and room models with freely movable mics, rotary speaker simulation, a MIDI learn mode and loads more exciting features. The demo will function fully for ten days, after which it will start to emit an interruptive noise every few seconds.

System requirements

PC Pentium 4/Athlon64 CPU, 1GB RAM,

Windows XP, VST/RTAS host or standalone

Mac 1GHz G4 CPU, 1GB RAM, OS X 10.4,

AU/VST/RTAS host or standalone

Web www.ikmultimedia.com

IMAGE-LINE HARMLESS (PC)

A rather unusual plug-in instrument that developers Image-Line describe as a subtractive synthesiser powered by an additive synthesis engine. This essentially gives you access to complex filter and phasing shapes, and control over the frequency of each partial. The demo won't load any saved effects, and occasionally emits an interruptive noise.

System requirements

PC 2GHz AMD/Intel SSE-capable CPU,

512MB RAM, VST host or FL Studio

Web www.image-line.com



You'll be rocking out for ten days with the demo version of IK Multimedia's fantastic AmpliTube 3

USING THE DVD INTERFACE

- 1 Put the DVD-ROM in your DVD drive, let it spin up, and wait for the interface to appear. If it doesn't autorun, browse to it in Explorer/Finder and double-click **Computer Music for OS X or PC**, as appropriate. Read the disclaimer and click **Accept** when you're done.
- 2 The main interface will open. Mouse over the links for each section to get a brief description of their contents, and click on your button of choice – in our case, **Software**.
- 3 An Explorer/Finder window will open, showing you the contents of that folder. Any executable files can be run directly from the DVD by double-clicking them. Demos are generally presented as installer applications, but check any Readme text files for additional installation information.

PROGRAMS & PLUG-INS

Most of the programs on the DVD-ROM are presented as installers – simply double-click the installer icon and the application does the rest. However, plug-ins are often presented as .dll (PC), .vst or .component (Mac) files. To 'plug' the plug-in into your VST/AU host, just copy the plug-in file into your VST or AU plug-ins folder, as appropriate.

SAMPLES

Every month we give you a wealth of royalty free samples! You can use them in your music in any way you see fit, without having to pay a penny, even if you end up commercially releasing your work. The only thing you *can't* do is redistribute them as samples – eg, by making a sample CD with them. To install our samples, simply copy them to your hard drive.

>Exclusive full software!

Martin Eastwood Audio Duet^{PC}



Your free software this month is a hugely useful plug-in that makes double tracking an absolute breeze. Here's how to instantly fatten your sounds...

> Duet is an automatic double tracking PC VST plug-in from the creator of the **cm** Studio's feature-packed CompressiveCM dynamics processor. It previously retailed for €39 and was awarded an impressive 8/10 in our review in **cm**136, but you'll find the whole thing free on this month's **cm** DVD! Double tracking is a technique

whereby two versions of the same part are recorded, then played back simultaneously for a much thicker sound and wider stereo image.

Double tracking sessions were a particular pet peeve of John Lennon's, and in the 60s, engineers at Abbey Road Studios developed a system whereby two tapes would

play back the same vocal part to create an automatic double tracking effect. Normally this would result in phasing, but the clever Abbey Road boffins used an oscillator to modulate the playback speed of one of the tapes, creating variations in timing and pitch. Thus ADT was born, as heard extensively on *Revolver* and various other LPs

from the Fab Four.

These days, though, you don't need expensive tape machines and world-renowned studios, as Duet will create the same effects inside your PC.

In this tutorial, we'll show you step-by-step how to use all of Duet's features, so grab your **cm** DVD and get ready to rock!

MARTIN EASTWOOD AUDIO

(((Duet)))

Voice One

- PITCH**: Controls the voice's detune level. (6 Cents)
- PAN**: Pans the signal between the left and right speaker. (1.000)
- DELAY**: Delays the voice by up to 100 milliseconds. (20.0 ms)
- FEEDBACK**: Controls the percentage of the delay's output that's fed back into the input. (0.0 %)
- RATE**: Sets the rate of the vibrato applied to the voice from 0.01 to 50 Hz. (0.01 Hz)
- DEPTH**: Controls the amount of vibrato applied to the voice. (0 %)
- GAIN**: Sets the gain of the voice from 0 to -40 dB. (-5.000 dB)

Voice Two

- PITCH**: Controls the voice's detune level. (-6 Cents)
- PAN**: Pans the signal between the left and right speaker. (-1.000)
- DELAY**: Delays the voice by up to 100 milliseconds. (30.0 ms)
- FEEDBACK**: Controls the percentage of the delay's output that's fed back into the input. (0.0 %)
- RATE**: Sets the rate of the vibrato applied to the voice from 0.01 to 50 Hz. (0.01 Hz)
- DEPTH**: Controls the amount of vibrato applied to the voice. (0 %)
- GAIN**: Sets the gain of the voice from 0 to -40 dB. (-5.000 dB)

Presets

- PRESET A OR B**: Preset A

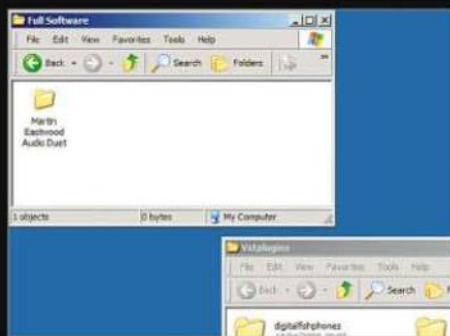
Input

- INPUT**: 0.000 dB
- SYNC**: Off
- GRAIN SIZE**: Small
- MASTER**: 0.000 dB

Annotations:

- PRESET A/B**: Compare two different settings, both of which are stored in the same patch.
- INPUT LEVEL**: Sets the input gain level, between -40 and 0 dB.
- SYNC**: Delays the dry output to match the inherent latency of the additional voices.
- GRAIN SIZES**: Sets the size of the analysis window for the pitchshifter.
- MASTER OUT**: Controls the effect's master output gain.

> Step by step Installing and double tracking with Duet



1 > The first thing we need to do is to install Duet. Navigate your way to the **Software\PC Software\Full Software** folder on the **cm** DVD and copy the **Martin Eastwood Audio Duet** folder into your VST plug-ins folder. If that doesn't mean anything to you, we suggest that you read **Beginners Start Here.pdf**, which you'll find in The **CM Studio\CM Studio Tutorials** folder.

2 > Next, launch your DAW. We're using *Computer Music's* very own energyXT 2.5 Core CM Edition, which can be found in the **CM Studio** folder on the disc, but any VST-compatible DAW will do. On launching energyXT, you'll be presented with the New project dialog. Select **Empty Project** and click **OK**.

3 > Copy the **Tutorial Files\Martin Eastwood Audio Duet** folder onto your hard drive, and drag the **Mini DMO Acappella.wav** audio file onto energyXT's sequencer. A new audio track will automatically be created. We're going to use Duet to add more voices to this vocal line. Bring up energyXT's **Mixer** view by clicking the button under the transport bar.



4 > On the Sequencer track, click the **+** button in the Inserts panel. You'll be presented with a list of all your available plug-ins. Select **Martin Eastwood Audio Duet>Duet**. The Insert panel will change to reflect the added effect. Double-click where it says **Duet** to bring up the effect's interface.

5 > Use energyXT's patch browser in the top left-hand corner of the window to audition the presets. This will give you a broad idea of what Duet is capable of. When you're done, select the **Init** preset, which initialises the plug-in, so we can create an effect from scratch.

6 > With the **Init** setting, you won't hear any difference between the processed and unprocessed signal. Duet outputs the original signal, plus two extra voices, which have their own separate settings. The volume levels of both of these are currently turned down to -40dB, rendering them inaudible.



7 > Turn Voice One's **Gain** level up to **0dB**. With the **Init** settings, this voice is a straight copy of the input signal, panned hard right and delayed by 20ms. You can hear Voice One on its own by turning the **Input** knob down to **-40dB**. This more or less silences the dry vocal, leaving Voice One isolated.

8 > Turn the **Input** knob back up. When you have multiple singers or tracks performing the same part at once, they won't be perfectly in tune. Duet's automatic double tracking uses pitchshifting to create the realistic impression of multiple singers. Set Voice One's **Pitch** to **30 Cents**.

POWER TIP

>CC me in

It's possible to automate Duet's parameters, but they can also be controlled in real time via MIDI, which is handy if you fancy using the effect in a live setting. You can find the MIDI CC values used for each knob in the **Duet** manual, which is in the **Martin Eastwood Audio Duet** folder on the DVD. The manual also contains a highly useful troubleshooting section, so check it out if you ever get stuck.

Let's Duet

Automatic double tracking effects aren't a very common sight in the plug-in industry, so we asked marvellous Martin Eastwood what inspired Duet's creation...

"I am rubbish at singing, and originally I was wondering if I could disguise how out of tune I was by layering a wall of detuned voices over my vocals! From there, it slowly turned into something a bit more usable, and eventually into its current form."

WHAT CHALLENGES WERE INVOLVED IN DEVELOPING THE PLUG-IN?

"Getting a plug-in to work the same in all hosts can be tricky, as many of them implement things differently, such as latency compensation, for example. The pitchshifting in Duet has an inherent latency associated with it that varies depending on a number of its settings. Not all hosts cope well with plug-ins changing their latency dynamically, so Duet ended up being more complicated than expected to compensate for this, and also to ensure that it behaves the same whichever host it's loaded in."

HOW DO THE DIFFERENT GRAIN MODES AFFECT THE SOUND?

"The Grain button changes the grain size of the underlying pitchshifter. It should only make subtle changes for most audio but the larger grain size should shift audio with more bass content more accurately with less artifacts. It basically uses a larger buffer to analyse the audio, so it gives you more space to fit in a low frequency note completely, as they can be really long compared with high frequency stuff. However, the downside of this is that latency increases, as the pitchshifting process is linked to the size of the analysis buffer."

DO YOU HAVE ANY TIPS FOR DUET USERS?

"If you are looking for realistic sounding harmonising, try and stay within +/-8 Cents for each voice. Once you start layering voices further apart than this, the effect starts to sound very unnatural, as the ear begins to detect the differences in pitches between the voices as being out of tune. You can get some interesting effects, though, especially when you push the plug-in to extreme settings!"

> Step by step Double tracking with Duet (continued)



9 > You should now have some semblance of a double tracked vocal. Turn the **Gain** of Voice Two up to **0dB**, and set its **Pitch** to **-30 Cents**. This will give you a full-on, multitrack-style stereo panorama. If you want to make the effect slightly less intense, simply turn down Voice One and Two's **Gain** levels.



10 > It's also possible to control the stereo position of each voice using their **Pan** settings, which have a range of -1 (hard left) to 1 (hard right). To get a closer, tighter sound, use values nearer to **0**, which places the voices in the dead centre of the stereo panorama.



11 > The **Delay** knobs control the length of time between the original signal and the extra voices. Higher values create a 'slapback' delay effect. This is ably demonstrated by the **Slap Back** patch we've loaded here.



12 > We go back to our previous settings. Now take a look at the **Feedback** knob, which controls how long the delayed repeats take to fade out, creating a cool, retro-sounding effect at higher values. Set to **100%**, the **Feedback** keeps the delay buffer playing back at the same level indefinitely.



13 > Duet also includes a pitch modulation effect on Voices One and Two, the depth and frequency of which are controlled via the **Depth** and **Rate** knobs. Using larger **Depth** values can create abstract tape-style effects, so if you're after authentic double tracking, keep the **Rate** between about **-10** and **10%**.



14 > Duet can store two setups in each patch, which can be A/B compared. These different settings, known as **Preset A** and **B**, can be swapped between by clicking the **Preset** button. The **Sync** function in the **Input** menu is independent of the two presets and doesn't change state between presets **A** and **B**. **cm**

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PC

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We've got a dual-genre collection this month, so if you produce urban rock or chilled electronica, we've got you covered

Groove Criminals

163 Beats

54 Drum hits

4 Guitar multisamples

37 Hits and FX

78 Loops

A Music Man Axis Super Sport and a Fender Fat Telecaster were used for the riffs and chords, while the effects comprised a mixture of vintage/classic/new stompsboxes and software. The guitars were also often doubled up for a thicker, heavier sound. The beats are a mixture of programmed patterns and parts played on a Yamaha electronic kit. Sound-wise, they're a mix of straighter rock/metal drum sounds and more urban-style, programmed hits.

www.groovecriminals.co.uk

Cyclick

3 Construction kits

2 Drum kits

This varied collection provides two drums kits, drum loops, basslines and guitar loops across three tempos in a selection of keys. The samples are inspired by the kind of hip-hop/rock crossovers that have been going on since Run DMC/Aerosmith and Public Enemy/Anthrax joined forces.

Cognition Audioworks

307 Bass loops

A library of bass loops created using an Ibanez six-string with EMG pickup run through an Avalon VT 737 SP. They were played in a variety of keys at 68, 74, 160bpm.

cognitionaudioworks.com

ASCII beat

38 Drum loops

41 Guitar loops

22 Synth Loops

These guitar, synth and drum loops from cm newcomer ASCII beat were created using a wide range of hardware and software, including an Electro-Harmonix Tube Zipper, Native Instruments Guitar Rig, Alesis Microverb, Logic ES2 synth and PSP Audioware VintageWarmer.

soundcloud.com/ali-jamieson

The Electronic Garden

27 Multisampled synth

patches

199 Loops

12 One-shots

Loops from clunky old drum machines, like the Roland CR-78,

Oberheim DX, Boss DR-110 and Korg Minipops, recorded both dry and with effects (ranging from hard tape saturation to more bizarre Eventide excursions), with sequenced loops from The Electronic Garden's massive modular synth. The multisamples were culled from the Kawai K5000, PPG Wave 2.2 and Korg DW8000 synths, and the one-shots were created using an EMS VCS3.

www.theelectronicgarden.com

rachMiel

250 Loops/atmospheres

A wide range of electronica sounds, ranging from slow and simple to moderate and complex.

www.rachmiel.org

PLUS

100 Chris Mayr samples

Abstract electronic loops and effects from 120 to 126bpm.

www.mimu.eu

Goldbaby Fat H3500 patches

Five patches created using Eventide's legendary H3500 harmoniser hardware, provided in Kontakt 3 and EXS24 formats.

www.goldbaby.co.nz



Sample and video playback

cm videos are presented in MOV format, which means that you need QuickTime, QuickTime Alternative or VLC installed on your system to play them. Macs feature QuickTime as standard, and PC owners who don't have QuickTime installed can use VLC instead. VLC is an open-source media player that can handle pretty much any format you can throw at it - you'll find it in the VLC Media Player folder on the cm DVD. VLC is also recommended to Windows users who find that 24-bit samples won't play back in their Windows Media Player. For the latest version, go to: www.videolan.org

Producer Masterclass Video

Artist **dan le sac**

As one of the UK's best live hip-hop acts, dan le sac vs Scroobius Pip have become festival favourites. In this exclusive video, producer dan shows us how he creates his banging beats and lets slip some prized production secrets, all in the course of deconstructing his track *The Beat* in Ableton Live.

Web www.myspace.com/lesacvspip



HAVING PROBLEMS?

In the unlikely event that you have trouble with your disc, send an email to support@futurenet.co.uk and they'll help you out. Please do not phone us, as we don't give technical support over the telephone!

If you experience a problem with your software, you should first refer to the software manual. This is often delivered with the software itself or is sometimes placed on your hard drive when you run the installer. If you find that you don't understand some of the features of the software, remember to read the manual first. Should you be unfortunate enough to run into any technical difficulties with the software, it is often best to get in touch with the developer of that software - they are probably better-equipped to offer you the support you need than we are.

BROKEN DISCS: If your disc is corrupt, cracked or otherwise inoperable, we'll send you a spanking new replacement within 28 days. Send the DVD to: Disc Department, Reader Support, Future Publishing, CMU151/May/10, Bath BA1 2BW. And don't forget to include your full name and postal address!

cm STUDIO

Our exclusive suite of applications, instruments and effects is on the DVD every month – it's quite literally all the software you need to make great music now!

APPLICATIONS

XT Software energyXT2.5 Core cm Edition (PC/Mac/Linux)

VST host and sequencer with modular routing

Outsim SynthMaker CM (PC)

Create your own VST synths and effects

INSTRUMENTS

PowerFX Hütkins CM (PC)

Sample-based electronica synth

Ummet Ozcan Genesis CM (PC)

Another amazing virtual analogue synth

Muon CMplay (PC/Mac)

Powerful ROMpler instrument

Dominator (PC)

Virtual analogue synth with a classic feature set

u-he ZebraCM (PC/Mac)

Amazing virtual analogue synth

LinPlug AlphaCM (PC/Mac)

Subtractive synth with ring and amp modulation

Homegrown Sounds Astralis CM (PC)

Modulation-heavy 'soundscape' synth

Homegrown Sounds Astralis Orgone CM (PC)

Flexible sample-based synth

XT Software EnergyCM (PC/Mac)

Analogue-style sequencer

FabFilter One 2.01 (PC)

Beautiful-sounding single-oscillator synth

Kotkas Paax 3 CM (PC)

Feature-packed soft sampler

Odo Synths Unknown 64 CM (PC)

C64 SID chip-emulating VSTi

Krakli CMorg (PC)

Vintage organ instrument

AlgoMusic ElectraBass Rack CM (PC)

Easy to use bass synth that's packed with presets

Humanoid Sound Systems Scanned Synth CM (PC)

Create abstract noises and haunting instruments

Muon CM-101 (PC)

Analogue-style VST synth

Muon SR-202 (PC)

16-pad VST drum machine

Muon CM-303 (PC)

Emulation of the classic Roland TB-303 synth

Muon DS-404 (PC)

Powerful 16-part multitimbral VST sampler

LinPlug CM-505 (PC/Mac)

Analogue drum synthesis made easy

EFFECTS

KResearch KR-Delay cm Edition (PC/Mac)

Dual delay lines with filters and sync ability

KResearch KR-Reverb cm Edition (PC/Mac)

Easy to use, algorithmic reverb effect

Blue Cat Audio FreqAnalyst CM (PC/Mac)

Sophisticated stereo spectral analyser

NuGen Audio Stereoizer CM (PC/Mac)

Useful mixing tool for control over your stereo spread

Sugar Bytes Artillery2 cm Edition (PC)

Multi-FX with internal sequencer

Image-Line CM Vocoder (PC)

Special cm version of FL Studio's FL Vocoder

**START
HERE**
Get the cm Studio installed with our easy-to-follow PDF guides! They're on the DVD, in **The CM Studio/CM Studio Tutorials** folder

Aixcoustic Creations Electri-Q CM (PC)

Sweet-sounding and flexible equalisation

Martin Eastwood Audio CompressiveCM (PC/Mac)

Compressor/limiter with sidechain input

Audio Damage Pulse Modulator (PC/Mac)

Wild, stompbbox-esque modulation effect

Betabugz Audio Vascillator (PC)

Semi-modular feedback delay multi-effect

Image-Line CM WaveShaper (PC)

Flexible wave distortion effect

PSP Springverb (PC)

Authentic VST spring reverb effect

SimulAnalog Guitar Suite CM (PC)

Plug-ins modelled on classic guitar effects and amps

Ohm Force Ohmygod! (PC/Mac)

Crazy resonant/comb VST filter

Camel Audio CMFuzz (PC)

Quick and dirty distortion

Intelligent Devices MegaDelayMassCM (PC/Mac)

Sound design-orientated delay module

Sanford Phaser-CM (PC)

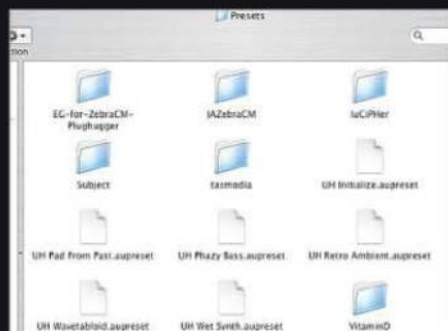
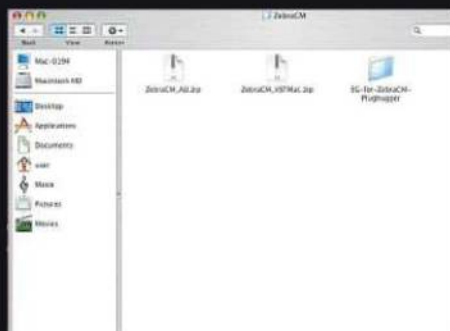
Phaser effect with advanced modulation abilities



Make fantastically dirty sounds with the CM WaveShaper distortion plug-in from Image-Line

Patch management in ZebraCM

Over 150 new ZebraCM presets from Plughugger are on the disc this month – here's how to use them



1 > On this month's **cm** DVD, you'll find a folder of 154 exclusive presets created by Carl Löfgren of **plughugger.com**, including bass, pad and lead sounds. You'll find the new patches and ZebraCM installer in the **CM Studio\PC Software\Plug-ins\Zebra CM** folder or **CM Studio\Mac Software\Plug-ins\Zebra CM**.

2 > Once you've installed ZebraCM, open the **EG-for-ZebraCM-Plughugger** folder and copy the **ZebraCM** folder within to **Library/Audio/Presets/u-he/ZebraCM** on a Mac or **Program Files\ZebraCM** on a PC. This is where ZebraCM's patches are saved and loaded from.

3 > Launch your plug-in host. We're using the **cm** Studio's energyXT 2.5 Core CM Edition, but any DAW will do. Drag ZebraCM onto the sequencer from the **VSTplugins/u-he** folder. This will automatically create a new instrument track. Click **ZebraCM** on the new track to bring up the instrument's interface.



4 > There are two ways to load sounds: either by cycling through them using the instrument's interface, or by loading a single patch directly via the host's patch management capabilities. To cycle through patches, use the left and right buttons on either side of the main display panel at the centre of ZebraCM's interface.

5 > For faster navigation, click the patch name to bring up a menu of all the patches in the current folder. To skip to the next folder, select the last patch in the folder and click the right arrow. To save time, consider putting your favourite patches in the route folder of the **u-he/Presets/ZebraCM** directory.

6 > To load an individual patch, click the three dots at the top left hand corner of the instrument interface and select **Open**. Navigate to the patch you want and double-click it to load it. To save a patch, click the **Save** button and enter a name. ZebraCM will save it to the current patch directory.

Designing patches

We spoke to Plughugger's Carl Löfgren about working with ZebraCM. So, Carl, how did you find your first time working with ZebraCM?

"Damn cool! Prior to ZebraCM, I hadn't used any plug-ins by u-he and I was surprised to find out how capable it is. Although easy to use, ZebraCM is actually quite deep and can be used to create anything from bread and butter sounds to the complex and downright odd. It's got character, and the LFOs and oscillators are nothing short of fantastic! Drawing your own LFO waveforms can create seriously dynamic and evolving sounds. The only thing I miss in ZebraCM is a good

distortion effect. You can work around this by distorting the filter, but I would rather suggest that you add a distortion effect plug-in, my personal recommendation being Camel Audio CamelPhat."

What inspires your sound design?

"This might sound new age, but it's all about finding the soul of the synthesiser and seeing where it leads you. Creating sounds on a synth that doesn't want to go in a certain direction is a pain and anything but fun. I always start with the oscillator, listening for 'that something' that makes me want to explore it further."

Do you have any tips for aspiring sound designers?

"Three things: play to your strengths, keep it simple and dare to experiment. The kind of sounds you love will probably be the ones you have most passion creating. The mistake many new sound designers make is to make them overly complex. Keep the foundation simple and add the hot sauce at the end. When done, save it, then change the fundamentals, such as the oscillators, the tuning and the filters. It's a classic trick that always generates interesting variations." **cm**

www.plughugger.com

Reader music

Our expert producers and studio engineers rate the latest tracks submitted by **cm** readers



Send us your music

For the chance to be featured in *Reader Music*, simply send us your track via the SoundCloud DropBox on our website (see the walkthrough below for instructions), along with a description of your act, an image (sleeve art, photo or logo that you own the copyright to), and your equipment list. Be absolutely certain that no copyright samples have been used! The best tracks we receive each month will be reviewed here and featured on the **cm** DVD, so send yours our way today!

Rules:

1. Send no more than two tracks
2. Submit your track(s) via the SoundCloud DropBox on our website
3. The audio and MIDI files used must all be original and/or royalty-free

MICHAEL L PENMAN Off

Artist Michael Lindsay Penman
Contact www.soundcloud.com/michaellpenman



> There are few more prolific contributors to the **cm** SoundCloud than Michael L Penman, and it was a hard call to pick just one of his many tunes for these pages. It was the bassline in *Off* that won us over, though. On a big system, it's like a huge burrowing slug: a heavy, continuous legato tone modulating over a couple of

notes. Hear it on small speakers and you'll wonder what all the fuss is about, because it's all sub-bass.

The skill to this track is the balance of the very low-level, peripheral noises. In the spaces, you can hear very distant sounds that provide a background, over which there are interesting snippets of percussion, keyboard and vocal. All this is very apparent before the bass appears.

The middle section, where the low end drops out, works exceptionally as a relief from the driving bassline, too, even though it's not really any less busy than the rest of the track.

The mix is excellent. The tonal and dynamic balance are spot on, and there's so much space to hear what's going on. Minimalism isn't as easy to pull off as you might think.

What the artist says:

"This was made when I was home in Scotland during the Christmas snow, so I had a lot of time on my hands. I started with some loops and went from there. I then tried to infuse some soundscape and funk elements. It was all done in software and mixed on headphones."

Equipment used Apple MacBook, Ableton Live 8, Digidesign Pro Tools 8 and Mbox Mini 2, Ultrasonic DJ1 Pro 'phones, Sugarbytes Effectrix, Native Instruments Absynth and Reaktor, Arturia minimoog, Sonalksis TBK3, PSP Audioware VintageWarmer2, Audio Damage plug-ins

ANTHÉM Tuesday Turtle

Artist Anders Bothén
Contact soundcloud.com/project-dta



> Built around a driving beat, the energy of this track is refreshing upon first listen. Stylistically, though, it doesn't quite know what it is. Anders describes it as DnB, but with the tempo at 120bpm, it's way too slow, even for breakbeat. The energy is up there with drum 'n' bass, certainly, due mostly to the double-time programming, as

well as the sampled vocal 'huh' sounds that fervently pan around, striking that James Brown-esque emotional chord.

The bassline is massive. It only plays for two or three beats every two bars, but its impact and the space it opens up for the beat really make this track. The distorted sound is thick and heavy, but could do with some more clarity. Then again, it might lose some of the mystery if it was processed like that.

The drum programming is good on the whole, but there are some moments where the timing feels a bit stilted and in need of tighter quantising. The touches of additional keyboard are all in very good taste and certainly help enhance the urgent nature of the tune.

What the artist says:

"Being a bass player, groove is my main priority and this track is no exception. I built it around a funky drum loop (which isn't there anymore) using various drum samples and a snare from the NI Kore Player funk kit. All the synths are 'drummed' in using my Novation Launchpad, making the track even groovier."

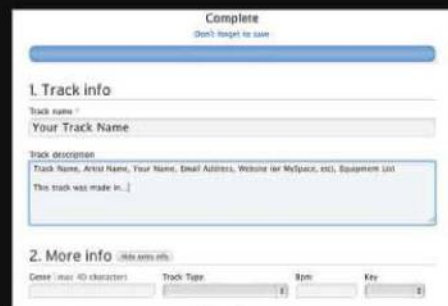
Equipment used HP laptop, Ableton Live 8, Novation Launchpad and Nocturn, Korg nanoKontrol, ESI nEar04, Line 6 TonePort UX2, Line Audio Design CM3 mic, DDMF NYCompressor, ColourEQ and StereoOerT5, Native Instruments Kore Player, **cm** soft synths



SoundCloud makes sending and receiving music easy. Anybody can sign up for a free account and start sharing tracks straight away, although you don't even have to do that to submit your track to *Reader Music*...



1 > Go to www.computermusic.co.uk and look on the right-hand side of the page for our SoundCloud DropBox widget. Click **Send me your track**, then **Choose a file** and select your track.



2 > Enter *all* of the following in the **Track description** box: track name, artist name, your name, email address, website (or MySpace), equipment list and a brief description of how your track was made.

DILLIO Coming Up

Artist Dylan Thomas
Contact soundcloud.com/jasedude



> If the On-U Sound label are looking for acts to fuel their recent revival, this is the sort of thing they should go for: a heavy, groove-based dubfest, with nicely blended distortion on various instruments and plenty of echoing vocals.

There are layers upon layers of visceral sounds that continually rise and fall out of the general mire, and although the clarity isn't brilliant by nature of the thick distortion, particularly at the bottom end, it's all part of the big impression as various features come in and out of focus. There's a real character to the blended sound, too, which you don't hear everywhere: warm, distorted arpeggiated synths intertwined by delays. The middle drop provides a beautiful soundscape, as well as a relief from the kit, which you can easily get wrapped up in.

The top end work is a touch lazy, though. A bit more consideration for the shaker and hat interaction, maybe with additional input from other sounds, could bring in a bit of agitation here and there, rather than making it all too easy on the ear. But then it might lose some of the stoner appeal! Let's face it, the feel of the whole tune is good as it is.

What the artist says:

"I wanted to make this track feel like it was coming in waves, with a sense of anticipation. I stumbled upon the effect of putting an arpeggio through a filter and delay, which provides the build ups, then jammed the track out using a vocal sample courtesy of Brad Sucks, and two drum lines on a controller. Enjoy."

Equipment used Dell Vostro 1400 laptop, Ableton Live 8, Propellerhead Reason 4, Wave Idea Bitstream 3x controller

3 > Click **Upload new artwork** and choose an image. Confirm that you agree to SoundCloud's **Terms of Use** towards the bottom of the screen, hit **Send Track** and you're done!

What's wrong with my mix?

Setting aside his hectic work schedule, producer and engineer John Reynolds gives us his professional opinion on this month's featured reader demo

Producer/engineer John Reynolds



John's production CV reads like a who's who of Irish music: Andrea Corr, Sinéad O'Connor, Shane MacGowan, The Dubliners, Damien Dempsey and let's not forget U2. And if that's not enough, he's currently working on a film soundtrack about Irish music, too.

JENNIE MAHOOD Empty Seats, Crumpled Sheets

Artist Jennie Mahood
Contact www.hellojanuary.com



> Despite the minimal treatment and down-tempo nature of the song, this track is riddled with haunting melodies from a stunning vocal performance. Stylistically, you could call it minimalist trip-hop, with influence from Björk, Lamb and even the early electronic work of Emiliana Torrini.

Empty Seats pulls no surprises in its arrangement. The intro is an instrumental verse (almost), which turns round into the first verse proper, followed by a chorus of eight bars. I was uncertain on first listen whether or not the chorus was a bridge leading me to a higher point - the initial change and emptier arrangement suggested so, but the resolution is strong and the move into the second verse steps the gearing up again. The reflective drop bar before the middle section is delicate and sublime: it has all the time in the world and wallows in its own space. The following middle section takes you off at a tangent in the classic way, although the melody here isn't as strong as the rest of the song. Finally, choruses lead us out to an introspective drop ending.

Even in a minimalist track there has to be a level of imagination and innovation to maintain interest through to the end. *Empty Seats* only just gets away with it on this score because the basic sound palette is well conceived: toy pianos and music boxes, with contrasting abrasive string synths, driven at times by a good trip-hop loop. The piano playing is interesting and not always obvious, which helps the cause, plus the contrast of the beat and legato string bass provides a strong core.

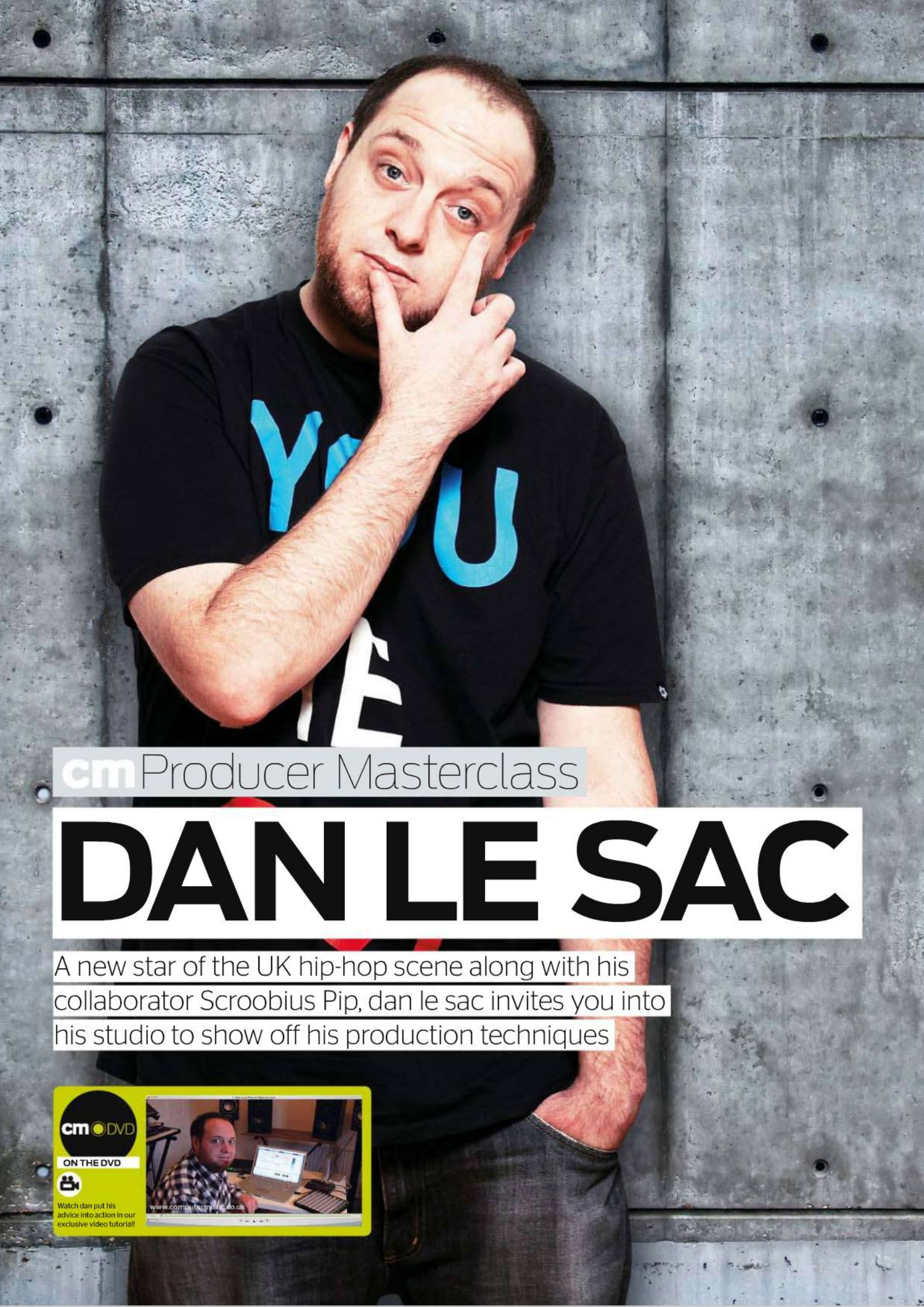
I'd love to hear subtle development of the sounds and beats, as well as low-level, peripheral noises that you don't notice on the first or second listen. The middle section could do with more consideration in terms of instrumentation, too. The strength of the vocal and heart-tugging harmonies deserve the best support.

With such a sparse arrangement, it's hard to get the balance wrong, but what really makes this mix shine is the use of echoes and reverbs to create depth. The vocal sound says a lot for built-in mic recording. The dry, loud vocal sound and the balance between it and the harmonies are perfect.

What the artist says:

"The phrase 'empty seats' arrived in my head one day, so I set about writing a song about what we leave behind, with the verses quite dark and the chorus/bridge more hopeful, both musically and lyrically. I started with just piano, then gradually built up the other instruments."

Equipment used Apple MacBook, Ableton Live 7, Line 6 Pod Studio KB37 interface/controller, drum loop from rekkerd.org



cm Producer Masterclass

DAN LE SAC

A new star of the UK hip-hop scene along with his collaborator Scroobius Pip, dan le sac invites you into his studio to show off his production techniques



Keeping it real

> dan le sac vs Scroobius Pip have carved a niche for themselves as the UK's bastions of old skool hip-hop values, and they've come a long way since they first met while working together in the Lakeside branch of HMV. The combination of dan's party beats and Pip's often thought-provoking lyrics has made them a hit on the UK's alternative music scene, with countless high-profile festival gigs and a signing to Rob Da Bank's Sunday Best label. To find out more about the pair's rise to stardom and how they make their floor-filling beats, we caught up with producer dan in his Reading studio.

"My cousin Billy was ten or 15 years older than me and was into synth pop, so him and his mates all saved up and bought

"I really got bang into it and produced loads of ropey techno in Reason"

SH-101s, so they could start doing synth pop covers," begins dan. "By the time I was in my teens, they had built up this mega studio with SH-101s, 303s, a Jupiter 8 and a couple of Junos. I used to go sit and watch what they were doing. For my 15th birthday, my mum and dad bought me an Atari ST. I got a copy of Cubase, managed to save up for a little Roland MT-32 module and went from

there. It wasn't until I bought my first Mac that I really got bang into it and produced loads of ropey techno in Reason! I then got into Ableton Live 3 in 2002 or 2003 and I'm still using Live now. In 2006, I was doing some promoting, booking acts for a gig in Reading. I hadn't seen Pip for a couple of years and he hit me up on MySpace and sent me his solo album, which was a jazzy hip-hop thing, so I booked him for this night and it worked really well. I did a couple of remixes for him and it went from there."

In this tutorial, dan shows us how he created *The Beat*, a track from the pair's new album *Logic of Chance*. Be sure to watch the accompanying video on the **cm** DVD to see and hear exactly how dan puts together his body-rocking sounds.

Web www.lesacvspip.co.uk

> Step by step Making *The Beat*



1 > The track starts out as an extremely simple breakbeat, drum beat and synth line using Live's default 909 sounds and four Analog synths. "I have to write the most basic of layouts," dan explains, "because Pip needs to be thinking way ahead to develop his lyrics. If I spend weeks on a beat, and Pip goes, 'That's shit,' I end up dejected and depressed." Happily, this one made it.



2 > Though this is still an extremely rough sketch in its current state, dan pays special attention to the 909 clap sound. "The clap has a little gated reverb on it just to give it a little bit more width. 909 claps have a nice undertone to them, a clap, then a kind of rumble, which is probably a flaw in the sample, but it sounds great - this just throws that out wider."



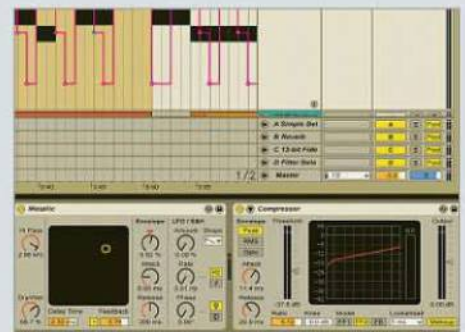
3 > Once Pip gives his approval, dan begins work on it in earnest. To keep the track interesting, he decides to borrow some ideas from dubstep, resulting in an unusual half-time section with a huge LFO-filtered bass. "My favourite part of this section is the crazy snare," says dan. The first part of this sound is a clap sample through a ring modulator and TAL-Dub-2 delay, then Ableton's Utility effect, which makes the signal narrower.



4 > A snare sound is layered under the clap. "It's just a pretty standard electronic snare," says dan, "but this time with the WatKat effect on it, which is just a not-very-good delay plug-in, to be honest! It degrades in the same way as tape, which is nice, but it doesn't have much controllability, which is frustrating. It's EQed to take away the bass rumble and put a bit of shimmer on the top end."



5 > The bass sound is created with Live's Analog synth. "With Instrument Racks, you can play two synths with one part," says dan, "but I prefer to keep them separate. The synth is two oscillators, a square wave through a band-pass filter that's modulated via an LFO, and the other oscillator is a sine wave, which just adds a little bit more to the bottom end that you tend to lose with band-pass filters."



6 > Live's automation is used to change the speed of the LFO controlling the filter cutoff, and the synth is run through a chorus plug-in. This adds a metallic effect and goes through a compressor to keep the level consistent through all that cutoff modulation. The shape of oscillator 2 is also automated to keep the tone constantly changing.

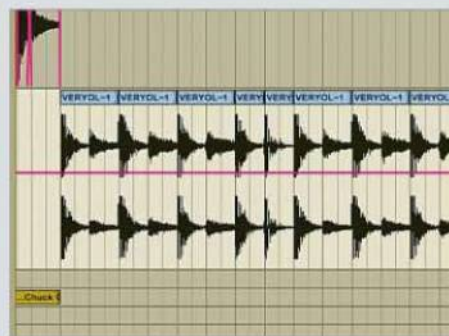
> Step by step Making *The Beat* (continued)



7 > Another Analog synth with unchanging sine and triangle waves is used to beef up the main bass. To ensure that the low end behaves as it should, dan keeps an eye on Live's built-in spectral analyser. "I can see it's just peaking around the 60Hz mark, which is the really sweet area on a lot of systems."



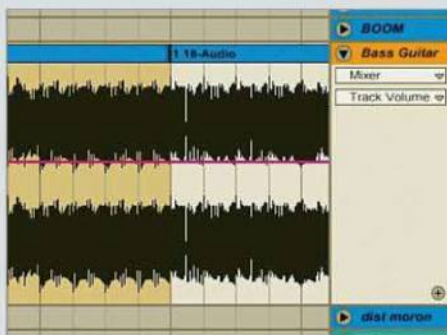
8 > To spice up the track's hi-hats, dan runs them through Live's Ring Modulator effect. "It doesn't do a vast amount, but is just there to lose that kind of synthetic 'Casio'-esque feel. It also makes it a bit dirtier." The hi-hats have delay and reverb applied via send tracks.



9 > Several breaks from sample packs are used in the track. "In the main body of the track, in the verses particularly, I've used a couple of drum loops from sample packs, which I don't normally do. They're typical 'Rapture'-like, upbeat sort of stuff. To get the rolls that I want, I'll chop it up and re-order it."



10 > Another drum loop with a reggae flavour is used to provide some variation later on in the track. "This break has been high-passed in the 300Hz region, just to thin it out, and is chopped up with a few little reversed sections here and there," reveals dan.



11 > Keen to lend the track a rockier, festival vibe, dan adds some real-life bass guitar licks via a Line 6 Pod hardware amp simulator. The best-sounding notes are then chopped out and looped to create a consistent bass guitar groove.

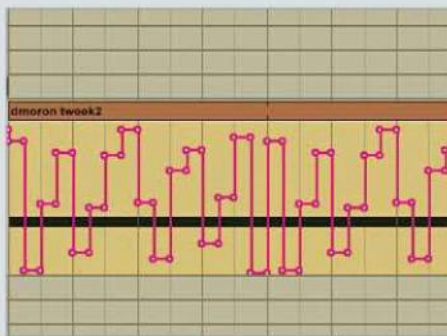


12 > Later on in the track, dan adds an electric guitar part. "This is a really crunchy guitar that hasn't been chopped up or re-sequenced - this is just my raw playing. As you can hear, I'm one of the greatest guitarists of all time! It's pretty low in the mix, but it's nice to add some layers and keep things exciting."

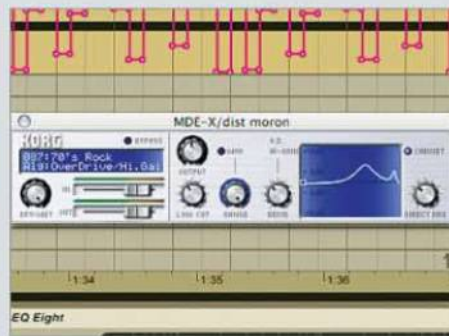
POWER TIP

>Ready, set, go

dan finds getting some quick and dirty effects on the go can help with the song-writing process... "The first thing I do when I open Live is put a reverb on a send - it's nice to be able just to not think about it! I've got a few presets that I like and have tweaked, so that I don't have to fanny about. Obviously when it comes to mixing time, I'll work on every 'verb and every effect, but presets are useful, because you don't have to distract yourself from the emotional part of making music and you tend to get more done in the day."



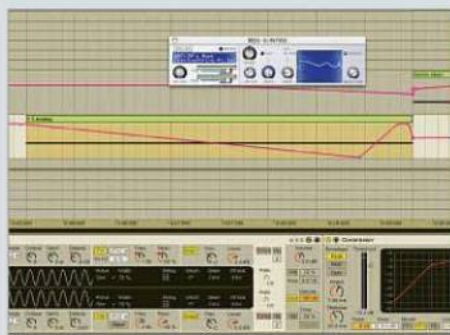
13 > An electronic sound is added to fill out the sections of the track where the dubstep basslines and guitar parts aren't playing. "This is basically a square wave that's churned to death by automation. The filter frequency cutoff is automated almost like a step sequencer. There's a compressor on it, which adds little pops at the start of each step, almost like little bass drum accentuations."



14 > As well as the filter cutoff modulation and compression, this down 'n' dirty sound relies on distortion. "Without the overdrive effect, the riff from the Analog synth sounds a bit camp, but adding the Korg MDE-X plug-in just gives it a really nice grind that drives it along."



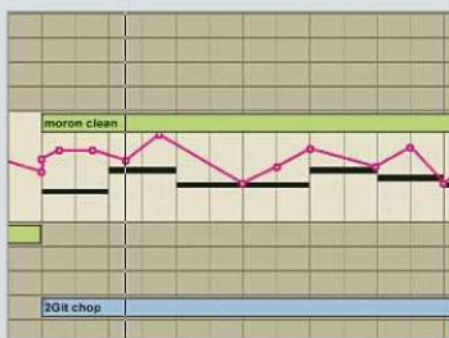
15 > To fatten up the sound, a more thumping bass is provided courtesy of alphakanal Automat. "This is based on a square wave and a sine wave, and has been tube driven. I used a really high resonance setting, which started to self-oscillate, but instead of trying to fix it, I just used a limiter to squash everything together."



17 > The raspy noise at the start of the track is another Analog synth patch based on two square wave oscillators. The filter cutoff frequency is gradually closed via automation, too, and the synth is run through another MDE-X set to overdrive mode, creating a huge organic growl.



19 > Pip's vocal for the track was recorded elsewhere, and dan adds it now. "This track is a little out of the ordinary in terms of vocals - usually we'd try and add warmth to the vocals, lose some of the intrusive breaths, and add clarity. As the lyrics are about letting the beat do its job, it's gone the other way, making it harsher and muddier, enhancing the breaths." Live's Redux is applied to the vocal to degrade it.



16 > To create a chordal intro to the track, Live's Analog synth is used yet again, this time with the oscillators tuned to sawtooth waves five semitones apart. The filter cutoff frequency is slowly modulated to create long sweeps. This synth then goes through the reverb send, making it sound more natural.



18 > The virtual MS-20 from Korg Legacy Analog Edition is used to provide bouncy arpeggiator part. "It just adds another brick to the wall of sound," explains dan. "Although you can't really hear it, without it the track loses some of the warmth. It also adds movement that wouldn't ordinarily be there."



20 > dan also provides some lyrics, then applies a Live vocal channel strip Rack preset, comprising a gate, compressor, EQ, delay and reverb. "Whoever put together this effects Rack knows more about vocal processing than I do! Some people would want to hide that they used a preset, but it's the same as buying a TC Electronic channel strip - it's the way you turn the knobs that makes the sound!"



dan le sac (left) and Scroobius Pip (right) certainly know how to break out of the box

Live and loud

With countless gigs and festival appearances under their belts, dan and Pip are now seasoned performers, but their live act wasn't always so polished...

"When we started out, I just had a phono cable coming out of the Mac, which was running Live," confesses dan. "We found that turning up to venues with just a stereo pair meant that, in some places, we were sounding terrible - soundchecks would be a case of me just pressing play in Ableton and Pip talking a bit! We began to develop it, using a little six-channel Focusrite audio interface, which gave us a bit more leeway with the sound, and now we're using ten channels out of a MOTU interface, drum pads, keys, and my vocals, as well as Pip's. Now we have the ability to sound great in every venue we go to, and it feels more live for the audience."

While Live makes it possible to perform using just a laptop, dan is keen to make the performance as visually engaging as he can...

"I could do everything I'm doing outside of the laptop in the laptop, but if I'm only turning one knob, the audience isn't getting a show," says dan. "Bringing stuff out of the laptop means the audience can see everything that's happening a little bit easier. With the stuff I do on the drum pads... well, there's no real reason to do it on the drum pads: I can do it on the Launchpad controller, or I could just pre-trigger it. That wouldn't be as interesting, though. We don't deceive people by trying to make out that all the drums are being played by someone live - there's no point in that. I wouldn't want to pay someone £100 a show to mime drums! By using the drum pads and running loops live, we're showing the audience that things can go wrong... and things do go wrong! If I bring in the wrong loop, it can be horrendous, especially if I bring in the wrong backing vocal. I could just play a backing track and it would be perfect every time, but where would the exhilaration be? I could just give Pip a CD every day and say, 'Play these ones tonight mate!'. cm



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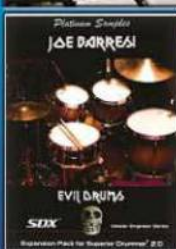
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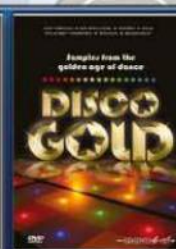
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Getting Creative

Creating your own effects using the standard features of your DAW can be both fun and creatively rewarding

> You could go out into the wilds of the internet right now and find an endless array of freeware and commercial plug-ins: reverbs, compressors, delays, EQs, crunchers, choppers and even dedicated units that deliberately destroy your audio at seemingly random intervals.

Sometimes, though, comprehensive situational coverage just isn't enough. Sometimes, no matter how many plug-ins you have access to, that specific effect you're after remains elusive. When that happens, you can either continue hunting for the mythical VST that will result in the exact sound you have in mind, or you can jump right in and make that sound yourself, by hand.

The basic principle

Believe it or not, you don't need anything more than the basic functions of your DAW to create highly processed sounds, and there are a few reasons for taking this approach. The first is the one we've already mentioned: a desire to go beyond the sound of a dedicated effects plug-in. You might be dissatisfied with what's out there and want to see if you can do better.

The second reason is control. Working with pieces of audio at their most fundamental level gives you a level of precision control that many plug-ins don't. If you're hankering after the ability to fine-tune an effect, this could be the approach you need.

The final reason is simply creativity. There are plenty of cool and interesting effects that can be produced using very basic plug-ins or no plug-ins at all, and the techniques involved in making them can be inspiring and educational.

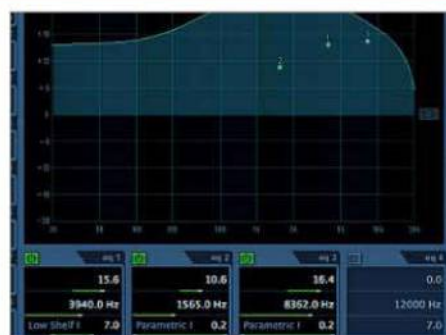
Do it yourself

In this guide, we'll take you through some of the effects you can conjure up using only the core functions of your DAW, as well as some creative ways of manipulating sound manually. We'll show you how to simulate delays, distortion, tremolo, chorus, de-essing and phasing effects, as well as how to construct a reverse reverb - all without going anywhere near your plug-ins folder.

Of course, there are some effects out there, such as EQ and compression, that can't be faked (and are essential for some of the techniques we're covering here), and we'll explain why that's the case shortly. So, join us as we show you how to go beyond the obvious functionality of your DAW and get some of those sounds in your head out into the real world.



> Step by step **DIY distortion**

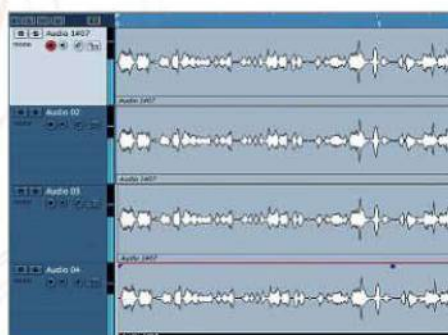


1 > You can create your own electro-style distortion by simply pushing a compressor and an EQ very hard indeed. We're going to take a little vocal sound make it fuzzed out, trippy and grimy. Start by loading a basic compressor in your DAW of choice.

2 > Push it hard: low threshold, high ratio and - the key settings - extremely fast attack and release times. We're looking for nearly constant, ultra-hard compression to squeeze the sound. That alone won't be enough to get the effect we're aiming for right now, but it's a start. (Audio on the DVD: **CompressedVocals.wav**)

3 > Load up an EQ and go mad! Seriously, activate two or three bands and push them as high as you like. This is where the character of the distortion will really come through - to get that electro-style fuzz, push really hard around 200Hz upwards. (Audio: **FinalDistortion.wav**)

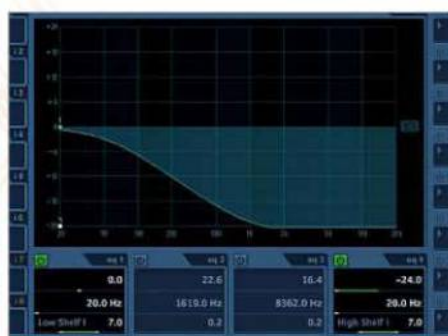
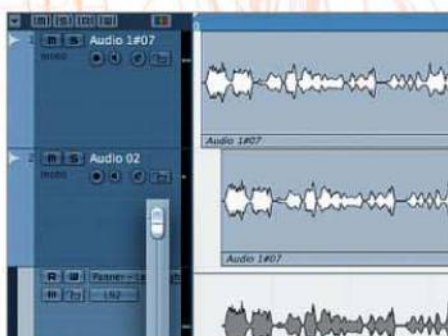
> Step by step **Delay it yourself**



1 > Making your own delay is incredibly easy. The idea is to copy the audio you want to delay several times, with a space between each instance, as shown here - the length of the space will define the 'delay' you get. Here, we've spaced our audio at regular intervals for a very simple delay effect. (Audio: **StraightDelay.wav**)

2 > It's also easy to emulate small-space, reverb-style delay effects, or even 'tech' delays like the iconic one used in *The Matrix*: line the repeats up extremely close together but not quite directly on top of each other. The closer they are, the more metallic and twisted the sound will become. (Audio: **MatrixDelay.wav**)

3 > As a rule, each piece of audio should be lower in volume than the one before it (assuming you want a conventional delay sound, of course - rules are made to be broken), making the delay fade out over time. The amount by which the volume is lowered should be roughly the same each time.



4 > There's more, too. Let's take our original **StraightDelay** audio and pan each copy to create the feel of voices coming from different directions. You can add even more copies to introduce an extra sense of depth to the effect, should you so desire. (Audio: **PanningDelay.wav**)

5 > Using EQ plug-ins and automation, assign different EQ settings to each audio track - think high- and low-pass sweeps, narrow EQ spikes and dips. This can greatly enhance the illusion of space, and create unique, otherworldly effects. (Audio: **EQDelay.wav**)

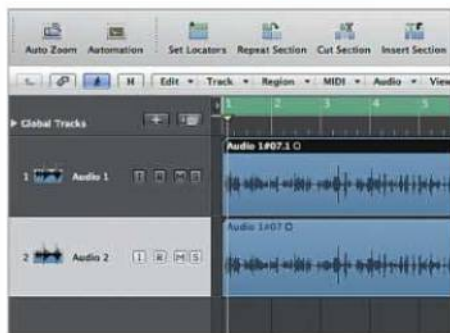
POWER TIP

>Spaced out

Creating delays like this enables you to get seriously creative, going way beyond what you'd be able to achieve with a delay plug-in and getting you to think experimentally about all types of effects. Why not try spacing the audio out at irregular intervals to keep the listener on their toes? Don't put them too far apart, though - just enough that the audio almost starts to warp and change. If you're going for a really trippy vibe, try reversing a few copies of the audio and panning and EQing them, to create a nightmare dreamscape of a delay.

> Step by step

Your very own de-esser



1 > Let's say you've got a vocal track with lots of sibilance that you need to get rid of, and you want extremely precise control of the frequencies that get removed. Create a duplicate of your vocal and line it up exactly with the original. (Audio on the DVD: **Sibilance.wav**)



2 > Load up a parametric EQ on the duplicated track and activate a band with a very high Q setting - it'll look like a sharp spike in the frequency curve. Set up a high-pass filter on one side of it and a low-pass on the other, then sweep the spike through the high frequencies until you find the exact spot where the 'ess' sounds in the vocal are most prominent. (Audio: **EssesOnly.wav**)



3 > The next step is to kill the output of the EQ'd track - this is the part of the signal that we want to remove from our vocal, so we need to make sure we can't actually hear it. Don't mute the track in your DAW, however - you need to set its output to 'off', 'no output' or similar.



4 > Insert a sidechain-capable compressor on your original track, activate the sidechain and select the EQ'd track as the sidechain input. This way, the compressor will only kick in when the high frequencies defined by our EQ are reached.



5 > You want a really high compression ratio here, as well as a moderately high threshold. Attack and release settings are down to you, but be aware that these settings - how quickly the compression kicks in and then lets go of the signal - can drastically effect the flavour of the sound-shaping that takes place. (Audio: **DeEssedVocal.wav**)

POWER TIP

>Peak pro

You can get two very different effects using this technique, depending on whether your compressor is set to RMS or peak analysis. RMS bases the compressor's response on the average volume of the incoming signal - with this active, you can widen the Q on your EQ spike to shape more of the sound, smoothing out or roughing it up as you see fit. The peak setting affects the loudest parts of the sound, which is great if you want much more precise control of where exactly the sound will be ducked.



Our tremolo effect was too pronounced in this state, so we brought up the volumes of the troughs, which solved the problem

Problem solving

One of the interesting things about this kind of work is the sort of problems you'll come across while designing your bespoke effects. Put simply, every piece of audio is different, and while the processes demonstrated in this tutorial might sound good on our little vocal, they might not be quite as effective on your minimal house drum loop.

In the process of creating your bespoke effect, you may find your audio doing things you don't necessarily want it to do. Fixing such issues can be a headache, or it can become part of the process.

For example, when we were creating our tremolo effect, we ran into a problem. The tutorial calls for the volume automation to rise and fall rapidly as the note plays, and initially the sound resembled the automation pattern: spiky and jagged. After smoothing out the automation, there was an improvement, but it still wasn't what we were looking for, until we changed the automation so that the volume didn't drop out entirely, only lowering to about half of its original value. This gave us the effect we had in mind.

Even the most basic DAWs are extremely powerful, and there are very few parameters of a sound that you won't be able to tweak and tune in some way using their built-in functions. Things like sidechaining, automation, timestretching and fades can all be helpful when it comes to effects design, so if what you're trying isn't giving you the results you need, there's probably something in there that will.

Also, bear in mind that while an effect might sound great on its own, you need to be careful that it doesn't overwhelm the mix or get lost in it. The last thing you want is for your beautifully calibrated delay to get muddled up among the rest of your instruments.

> Step by step A chorus line



1 > Spoofing the sound of a chorus plug-in requires the emulation of two things: variable delays and pitch modulation. Begin by creating a few copies of the audio file you want to apply the effect to - no more than three or four, though.

2 > Stack the clips on top of each other, as shown. In order to create the delays you can either space them out, or, for a more original effect, timestretch them a little - even a small amount will make a big difference. Do this with each copy, making some shorter and some longer. (Audio on the DVD: **DelayedChoir.wav**)

3 > Most DAWs come with a basic pitch shifter, so find yours and load one up on each of your delayed tracks, but not the original one (the 'dry' signal). Again, you're not looking for huge differences between the copies and original. When the pitches are shifted to your liking, mix the audio files together until you hit the sound you want. (Audio: **FinalChoir.wav**)

Big power

What we're doing here, essentially, is showing you how to emulate plug-ins, but primarily for creative purposes, rather than in the interest of saving CPU cycles. Anybody who's ever used a new plug-in on an old system will know that it can slow things down to a crawl, but thankfully, that's something we don't have to worry about too much any more, since Macs and PCs are so powerful these days. Yes, truly envelope-pushing heavyweight effects and synths can still cause problems, especially if you use loads of them in a track, but with a modern machine you shouldn't have to shy away from using a plug-in for fear of hobbling its ability to play back your project.

There are a couple of ways to overcome glitches if they do occur, though. Bouncing down or summing tracks and creating submixes can often free up plenty of overhead. Most DAWs now also have some form of 'freeze' function: this simply renders your massive, CPU-sucking synth part as audio and turns the plug-in itself off until you need to edit it.

> Step by step Tremolo tricks



1 > Tremolo is an effect that involves modulating the volume of a held note. To create this without using a tremolo plug-in, all you need to do is automate the volume of the audio clip in your DAW, as shown. (Audio: **BasicTremolo.wav**)

2 > There are a few more clever things we can do to the sound. The first is adding a touch of reverb to give our tremolo sound a pleasing sense of space. A moderate amount of pre-delay will increase the warbling effect on our note, but you can play around with this setting until you get the sound you want.



3 > Add a phaser plug-in as an insert on your audio track. A low level of feedback will give you good control over the phase sweep - you don't want to overpower the sound, just have it move around a little. (Audio: **WetTremolo.wav**)

4 > You can also have lots of fun with this effect by chopping up and spreading out the audio. Lower the reverb a little, and widen the automation, as shown above, and you can create a cool slowed-down, choppy effect. (Audio: **TremoloWobble.wav**)

> Step by step

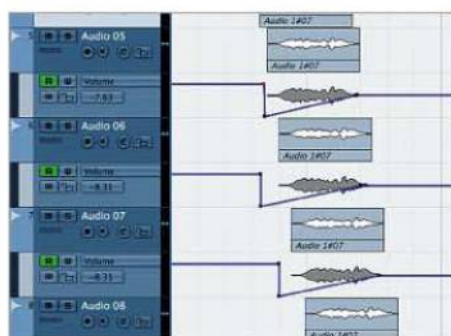
Reverse reverb



To avoid colouring your signal when making EQ adjustments, it's worth using a linear phase model like 112dB's Redline Equalizer

1 > Reverb plug-ins employ extremely complex algorithms, so it's not really possible to literally emulate one. You can, however, manipulate audio to get some great reverb-style effects – in this case, a reverse reverb. Here, we've chopped the first part of our dry vocal take off, which we're going to use to create the effect.

2 > Just as we did with the delay, we've duplicated and spaced out our vocal – only this time, we've gone for multiple takes (16 to 20 seem to work for this example). This is where you can really fine-tune the kind of reverb you want, so experiment with the exact spacing.



Tips and tricks

MIDI MAPPING

Making your own effects needn't mean giving up the hands-on control that plug-ins can deliver in conjunction with a MIDI controller. For example, since your DAW no doubt enables you to assign MIDI controllers to its mixer functions, you can control the rate of a 'manual' tremolo effect, simply link a knob to that channel's volume fader and wobble it by hand.

CHOP CHOP

If you want to get really precise with your audio slicing – for your home-made delay effect, say – then think about using an app with beat detection capability. Chopping your audio up in something like Propellerhead ReCycle enables you to get very clean slices based on the transients of the clip.

CORRECT EQ

As we've mentioned, it's impossible to fake EQ, so you're going to have to rely on plug-ins for that particular process. When you're creating your own effects, a linear-phase EQ – which doesn't 'colour' the sound and maintains the integrity of your signal – is worth using.

SENT!

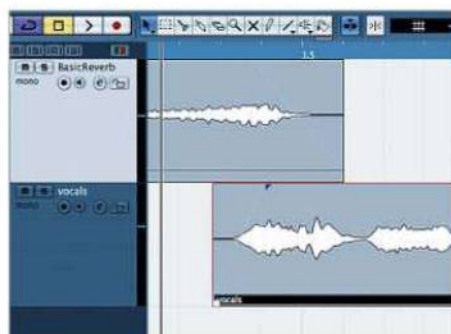
Because send effects enable you to mix the wet signal with the dry one, they're particularly helpful when creating your own effects, and even more so at the final stage when you're fine-tuning the sound you want coming out in your mix. For example, a compressor judiciously mixed in parallel with your phaser can change the sound completely.

TERMS OF USE

Just as plug-ins shouldn't be used for the sake of it, neither should the manual processes we're discussing here. If you're doing it out of frustration at a sound not going the way you want it to, it may be worth going back and re-recording it or finding an alternative.

3 > The key to building this reverb is automation. Automate each take's volume, so that it rises from zero, as in the picture above – you can just copy and paste the same automation curve to each track in turn. Make sure the final volume of each successive take is slightly lower than the one before it. (Audio on the DVD: **BasicReverb.wav**)

4 > Bounce all your layers down to one audio file, then reverse it. If you want to do anything else to your sound (timestretching it, for example – see *Power Tip* – or normalising it) then this is the time to do it. (Audio: **ReverseReverb.wav**)



5 > Put your original, full vocal take back into the mix. Then, using careful fades and cutting, blend the reverse reverb sound and the dry vocal together, using the mixer faders to balance them. Try, for example, placing this effect just before the beat kicks in on a hard dance track. (Audio: **FinalReverb.wav**)

POWER TIP

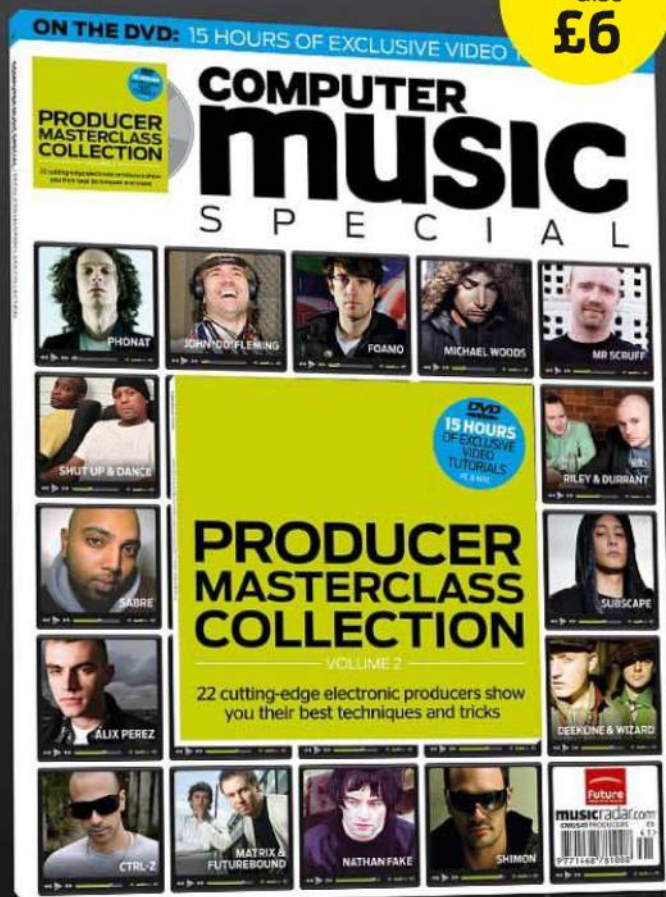
>Long tail theory

Almost all DAWs come with timestretching functionality built in. Beyond its usefulness in terms of making parts fit into a track, this has many other creative applications. Say you wanted to extend your reverb tail all the way across four or eight bars – many plug-ins aren't designed to cater for that sort of length, but you can use your timestretch tool to get that tail as long as you want (within reason), building towards a climax from as far away as you like.

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Effects that can't be faked

Emulating effects processes manually can be great fun and lead to all sorts of creative places you wouldn't otherwise find yourself in, but there are some that you're just not going to be able to fake by hand. Certain effects do complex things that simply can't be done via any other means, while others are defined by the sound they create and thus defy the need for emulation.

The first of these is the equaliser, a processor so important in music production that every DAW has at least one decent example built in. By and large, the software EQs of today work in the same way as their hardware counterparts, which pass current through a phase-shifter and recombine it with the original signal to raise or lower the volume at certain frequencies. The digital versions do the same thing, only they pass the signal through something called a shift register - essentially, a number of programming routines that subtly change the signal. Recombine this with your original, dry signal and you change the sound. The most basic EQ enables you to raise or lower predetermined frequency bands, but more flexible types - parametric EQ, for example - give you control over everything from the frequency and gain of your EQ adjustments to how precise they are - the 'Q' factor - using this recombined signal.

Software EQ relies on a lot of complex bare-bones programming, making it pretty much impossible to recreate manually using your DAW's general functionality.

The big squeeze

The same principle goes for the compressor. In essence, a software compressor is a programming routine that lowers the volume of the sound by a set amount (the ratio) once it crosses a certain level (the threshold). Hardware compressors use complex electronics to do this, passing the signal through numerous amplifiers and control circuits.

Using volume automation, you can create a vague emulation of compression by simply drawing in volume fader movements, but this won't give you the same level of control over how the sound really behaves in the mix. For that reason, we'd recommend using compressor plug-ins, rather than attempting to fake the same effect by hand.

Reverb is another effect often - but not always - best left to a plug-in. Of course, as you've seen in this tutorial, it is possible to copy and place audio in such a way as to get something approximating a reverb effect, and you could theoretically take the time to create your ideal reverb using lots of audio copies and EQ, but generally speaking, you'll get far more natural sounding, 'conventional' reverb from plug-ins. This is because they're built on complex algorithms that have a range of effects on the sound, calculating things like sound absorption, reflection time and room volume, using the results to emulate real-world spaces, classic hardware plate and spring reverbs, etc. There's no reason not to experiment with creating your own reverb effects in your DAW, however, but do approach it with the aim of creating something 'out there', rather than just the predictable sound of a stadium or bathroom.cm

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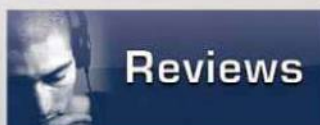
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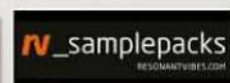
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SOUNDS OF SCI-FI II

The sound designer strikes back, as we take apart and reproduce more classic science fiction sound effects from cinema and TV

> It's as inevitable as the tide, or the daily reappearance of twin moons on Tatooine's dusty horizon. Yep, we're talking about the sequel! We knew we were onto something when we unleashed the unstoppable force that was our sci-fi sound effects feature way back in 2008 (find it on this month's DVD), and it was inevitable that we'd return to take a look at some of the famous cinematic sound effects that we didn't get to cover the first time round. After all, science fiction is as old as cinema itself, and as we pointed out last time, much of the character of sci-fi cinema is defined by the sounds that burst from the theatre speakers. As such, there are dozens of sound effects that have etched their way into

our cultural conscience. Ask yourself (or any ten-year-old child): what does a laser gun sound like? How about a transporter beam? We surely needn't tell you (or the child) the answer.

Sound effects are so important that we insist on them, even when logic says they shouldn't be there. Do starships make a noise as they glide majestically through the cosmos? Well, no, as sound needs to travel through a material and space ain't nothing but a vacuum. Yet the audience of science-fiction movies demand that spaceships be accompanied by the shrieks, rumbles and whooshes of a glorious cacophony of blasting laser beams, roaring fighter craft and wall-shaking explosions.

In our previous feature, we looked at how some of these famous sounds were created. We gave you lightsabers, the Tardis, Daleks and a certain lovable astromech droid. This time around, we'll be showing you how to create the signature starship rumble made famous by sound designer Alan Howarth. We'll also clue you in on the famous Blaster Beam used to forge the immortal cue that signified the approach of V'ger in *Star Trek: The Motion Picture*, provide you with the knowledge required to create the sound of a Transformer in action, and more besides. So, strap that blaster to your side, lock and load those photon torpedoes and journey with us once again into worlds unknown!



> Step by step Starship engines

Location, location, location!

Both of the walkthroughs on this page showcase ways of livening up a potentially static and boring white noise patch with organic, mechanical sounds.

Though the rumbling starship engines had been heard before *Star Trek: The Motion Picture*, Howarth's subtly chaotic effect changed the way we'd hear them from that moment on. He went much, much further than we have in our walkthrough here, though. So in addition to white noise and the air conditioner, he was also able to loop in some recordings he made on location at the Jet Propulsion Laboratory's Skunkworks division. There, he was granted access to all manner of top secret engine noises, wind tunnels and other machinery essential to the design and testing some of the most sophisticated aircraft in the world.

Now, neither you nor we have access to such sound design luxuries, but there are all sorts of substitutes that you can try. If you're serious about sound effects, it'd be in your best interest to invest in a portable digital recorder of some kind - there are many different models available. Keep it with you at all times, as you never know when the perfect source material will jump out at you from nowhere.



1 > Starship engine noises were virtually redefined by *Star Trek: The Motion Picture*. The sounds are a combination of live recordings and a touch of synthesis. The deep, rumble of the Enterprise's engine begins with as mundane sound as you can imagine: an air conditioner! You can record your own air conditioner or heater. The noisier it is, the better!

2 > Once you've got your mechanical rumble recorded, drop it into your DAW software. We've put our recording in Sonar, where we're using the built-in EQ to roll off a lot of the high-frequency content. Even at this early stage, we're getting a sound that's close to what we need.



3 > Next, we're going to need a synth that can generate some noise. Our very own Dominator is a fine example, so let's call it up. Select the **Init** patch. We only need noise, so look to the Mixer section and turn Osc A all the way down, then boost the Noise slider. Now record a single note into the project, running the full length of the audio sample.

4 > Now it's simply a matter of reducing the filter **Cutoff** rather drastically - try **3.6** - then cranking the **Resonance** up to around **85**. Play your project back while adjusting the mix between the synth and recording. As you can hear, the audio adds a lot of interest to the static synthesiser patch.

> Step by step The Aliens pulse rifle



1 > The memorable sound of the marine pulse rifle in *Aliens* created a real sense of power and impact. We can recreate it using nothing more than FL Studio. Fire it up and set your **Tempo** to **182bpm**. Set your pattern length to **8**. Paint in five consecutive beats of the kick, skip the next four and paint in six more, as shown.

2 > The rhythm is suitable, but we need to add some noise. Duplicate the kick pattern onto the Clap track, then replace the Clap sound with a **3xOsc** synth, and turn down Osc 2 and 3. Choose the **Noise** wave for Osc 1. Now, click the **Ins** tab to access the **Volume** envelope. Reduce the **Attack**, **Sustain** and **Release** segments to nil, and set the **Decay** to under 9 o'clock.

3 > Open the **Mixer** and select the **Master** output. Drop in the Fruity Blood Overdrive plug-in and boost the **PreBand**, **x100** and **Color**. Stick a Phaser in the second slot. Set the **Sweep** to **0.0859**, turn up the **Frequency Range** and **Feedback**, then set the **Stages** to **17**. Reduce the **Max Depth** to **0.67** and play it **100% Wet**. Fine tune to taste and, well, "let's rock!"

> Step by step The Star Trek transporter beam



1 > Star Trek's transporter beam is one of the most recognisable yet mysterious sounds in science fiction. Hollywood legend tells us that the original sound designers used "piano strings on a beam". After an aborted attempt to recreate anything like the transporter effect with some old piano strings, we decided to try dragging a bow across a dusty old cymbal. It worked pretty well, actually!

2 > We've recorded a few shimmering cymbal sounds, copied and pasted bits of them onto a couple of tracks and experimented with pitchshifting and timestretching to achieve something close to the effect we're after. When we're satisfied, we export the results as a couple of WAV files, so that we can load them into a sampler.

3 > The sampler in question is Reason's NN-XT. We're using this one because of the ease with which Reason enables different instruments to be combined into a single Combinator patch. Import the sample **Shimmer1** into the NN-XT. Increase the Amp Envelope's **Attack** to **0.34 seconds**, and turn the **Sustain** down all the way. Set the **Decay** at maximum, and adjust the **Release** to **3.3 seconds**.



4 > Play an A below Middle C. We have a nice fade in now. Set the filter mode to **BP 12**, and turn the **Frequency** down to **135Hz**. Set the **Resonance** to **35%**. Next, set the **Mod Envelope** to modulate the **Filter** with a value of **34%**. Set the **Mod Envelope's Attack** to **3.92 seconds**, the **Decay** to **16 seconds**, the **Sustain** to **45%** and the **Release** to **28 seconds**.

5 > Next, import the **Shimmer2** sample onto another layer. Set the envelopes similarly to the other layer, but alter them slightly. Try using a high-pass filter and modulating it with a negative amount from the **Mod Envelope**. Let's add a **Subtractor** for the warbling sound beneath the shimmer. Use one oscillator and set it to a triangle **Waveform**.

POWER TIP

>Organic compounds

Don't be afraid to mix things up when creating your transporter beam effect. It has changed over the years, starting as a rather simple shimmering sound and winding up as a more organic, motion-filled sound. The effects teams have even mixed in treated vocals. You can try the same trick, adding a subtle vocoded track beneath all of the shimmer. The same technique works for a variety of effects. Effects designers for the recent *Star Trek* movie even threw in some pitched-down speech during the starship flybys, giving them far more life than the static engine rumble of your old Constitution Class vessel!



6 > Reduce the **Filter Frequency** to **40** and increase the **Resonance** to around halfway up. We want the sound to fade in and out slowly, so set the **Amp Envelope's Attack** to **75** and the **Release** to **44**. Turn off the **F.Env** control in the **Velocity** section. In the **LFO 1** section, set the **LFO Destination** to **F.Freq** to modulate the filter. Turn the **Amount** up to **50**, and the **Rate** to about **88**.

7 > Set **LFO 2** to modulate **Amplitude**, with the **Amount** on **95** at a **Rate** of **10**. Set the **Delay** to **50**. Add another **Subtractor** to create a rising tone, and set **Osc 1's Waveform** to **11** and **Octave** to **6**. Use the **LP 24** filter, with the **Frequency** at **11** and the **Resonance** at **22**. Turn the **Filter Env Amount** up to **75**, and its **Attack** up to **84**, **Decay** to **109** and **Sustain** to **52** with the **Release** cranked, as shown.

8 > Adjust the **Mod Envelope's Amount** to **65**, with the **Sustain** on full, **Attack** at **76**, **Decay** at **0** and **Release** at **113**. This will alter the pitch over time. Set the **Amp Env's Attack** to **32**, **Decay** to **100**, **Sustain** off and **Release** at **91**. Set **LFO 2's Rate** to **94** and **Amount** to **95**, and route it to the **Amp**. Now put the **NN-XT** and **Subtractors** into a **Combinator**. Adjust levels to taste and, "Beam us up, Scotty!"

Recycle and reuse

Many sound effects are indelibly tied to a specific movie or show. You can't, for example, imagine the sound of the Tardis dematerialising in anything but *Dr Who*. Ditto for *Star Trek's* transporter beam effect.

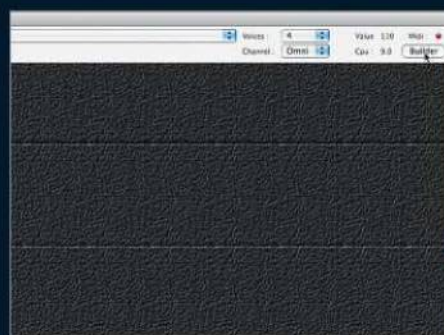
Even so, some sounds, though identified with a particular show, seem to turn up all over the place. The unnerving death-rattle of the Martian War Machines in George Pal's version of *The War of the Worlds* has been pilfered ad nauseam. We still identify it with the source, but repeated hearings have only further burned the sound into our consciousness.

Other sounds aren't so easily identified, and as such, become cinematic resources that are tapped again and again. Any discussion of the sound effects from James Cameron's *Aliens* would be incomplete were mention not made of the fact that some of the sound effects are recycled from previous works. For instance, the MedLab doors are cloned from the pod door in *2001: A Space Odyssey*. The sound of other doors heard in the film were lifted from *The Prisoner*. Ditto for the sound of the video-phone. That isn't to say that there wasn't any original sound design in the movie. Eight 'sound editors' worked on the film, and no less than three musicians are credited with 'synthesiser effects'. Much use was made of the then-mighty (and hugely costly) Fairlight CMI system. Due to scheduling constraints, though, some bits of the score were recycled by James Horner from his earlier *Star Trek* movies, and it has been said that the composer complained that the director was preoccupied with the sound effects.

Speaking of *Star Trek*, observant listeners will note that the 'Blaster Beam' from *Star Trek: The Motion Picture* would make a return in *Star Trek: The Wrath of Khan*. As a matter of fact, the Blaster Beam can also be heard in *2010, The Black Hole*, and *Battle Beyond the Stars* (the latter, a space opera courtesy of Roger Corman, is a wellspring of recycled sound effects). You can use the Blaster Beam sound in your own tracks simply by following along with our *V'ger* tutorial on this page.

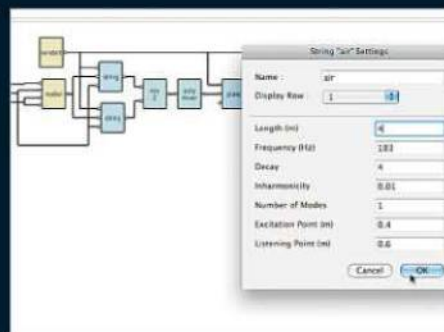
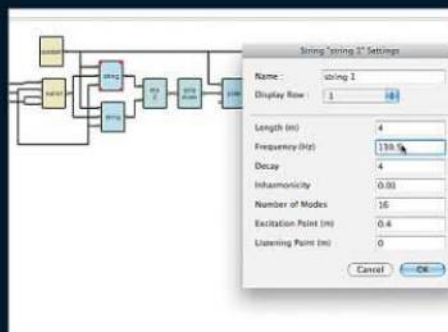
On occasion, a sound effect will be reused for dramatic or comedic effect, too. The squeaky-swish of the doors on the Enterprise have been used in parodies such as Matt Groening's animation *Futurama*, *Galaxy Quest* and other homages to the classic 60s show.

> Step by step Star Trek's V'ger



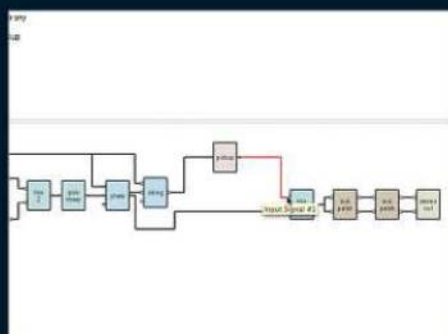
1 > The effect that came to signify V'ger was made by Craig Huxley, using his own invention, the Blaster Beam - an enormous metal beam with brass strings and pickups attached. It was played using a mallet and an artillery shell! Thankfully, we needn't build one. Instead, we can use a physical modelling synthesiser such as Tassman. Fire it up and load up a **Basic Dulcimer** instrument.

2 > Have a play with the basic patch. It sounds nothing like the ominous Blaster Beam, but all of the basic modules offered here would work as components: strings, a mallet and a plate. That's pretty good for a start. The only thing missing is the pickups. Of course, a dulcimer is much smaller than a Blaster Beam, so we'll need to dig deep into Tassman's Builder. Hit the **Builder** button in the top right to open it.



3 > Now we can access the raw material that makes up our instrument. We've got a couple of String modules, and another in the middle, with our Mallet getting them going. The Plate is just before the third string. Double-click the top-leftmost **String** module. The **Length** is given in meters, which we need to set to **3**. The pitch is too high, so change the **Frequency** to **130.5Hz**. Click **Okay**.

4 > Open the **String** module below the one you just closed. Increase the **Length** to **4 meters**, but reduce the **Frequency** to **65Hz**, or about half the value of the other module. V'ger's sting is a low, deep sound, and these settings reflect that. In the **Plate** module, set the **Length** to **4.5 metres**. Open the third and final **String** module. Yep, you guessed it: set the **Length** to **4 meters**.



5 > Open the **Modules** folder, then **Effects**. Drag a **Pickup** module into your Builder. Click and **Delete** the patch cable that runs from the output of the third String module to the Mix 2 module. Drag a cable from the last String module's output to the Pickup. Click on the Pickup's output and drag a cable from that into the Mix 2 input, where the String module's output used to go. Return to the **Player**.

6 > Reduce the String and Plate **Amp** settings to 9 o'clock. Now turn the Mallet's **Stiffness** and **Strength** up to around 3 o'clock. Turn the first two String **Decay** knobs up to 3 o'clock, then increase String 1's **Damp/Frq** to 2 o'clock, and String 2's **Damp/Frq** to 11 o'clock. The Plate's **Damp/Frq** should be at 9 o'clock. Fine tune the patch, adjusting the pickup **Distance** and **Reverb** to your liking.

> Step by step Seismic charge



1 > In *Star Wars: Episode II - Attack of the Clones*, Jango Fett uses a so-called "seismic charge". Listening closely, we hear something that sounds almost like a guitar 'twang', coupled with an explosive impact, and find that thumping on a few grand piano strings works well as our basic 'twang' - we record this into our computer to kick things off.

2 > We load our basic sample into Vember Audio's free Shortcircuit sampler, which we run in Xluto's Chainer. Next, we fired up Ichiro Toda's Synth1, where we adjust the **Mix** to only hear Oscillator 2. We also reduce the filter **Frequency** and boost the **Resonance** ever so slightly. We give the filter **Saturation** a nudge, too, and disable the instrument's built-in effects.



3 > We adjust Synth1's envelopes, turning down the Amplifier's **Attack**, setting the **Decay** to about **93**, the **Sustain** to **108** and the **Release** to **103**. For the Filter envelope, set the **Attack** to **41**, the **Decay** to **99**, the **Sustain** to **0** and the **Release** to **79**. Play the E above middle C. We can hear the sound taking shape. However, it's missing that certain artificial quality.

4 > We load up Ohmygod! from the **cm Studio**, reduce the Comb Filter's **Frequency** to about **47Hz** and adjust the **Feedback** to **73**. Increase the **Damping** in the Feedback Filter section to **40**, and increase the **Cutoff** to **4800Hz**. You can nudge the **Resonance**, too. Layer this with some white noise and you should be able to easily shake those Jedi off of your tail!

Instrumental sound design

Frankly, we're not sure what Ben Burtt used to make the sound for Jango Fett's seismic charge. He probably didn't bang on the strings of a piano as we did. Nevertheless, many of the sounds he made for *Star Wars: Episode II - Attack of the Clones* were indeed derived from musical instruments. Apparently, he employed cellos, electric guitars and other droning devices for speeder engines, spaceship growls and more.

This technique is as old as sound effects themselves. The famous Martian death ray from George Pal's take on H.G. Wells' *The War of the Worlds* was similarly created using four electric guitars, some amplifiers and a lot of feedback. These sounds take on a whole new meaning once they're removed from the association with the actual instrument and placed behind a fantastic backdrop.

We encourage you to experiment with instruments you have to hand. Play them in ways that they're not intended to be used and see what results you manage to produce. You never know, you might come up with exactly the right effect for your next YouTube epic!

> Step by step Battlestar Galactica's Cylon scanner



1 > Let's have a go at creating the ominous hum of the Cylon scanner eye from *Battlestar Galactica*. According to the man who created the sound back in the 70s, it was made by simply looping an electronic tone. Let's give it a go using Reason's Subtractor. Select a triangle wave for both Oscillators. Activate **Osc 2** and set its **Octave** to **3**. Turn the **FM** amount to about 9 o'clock.

2 > Turn to the Filter 1, reduce the **Frequency** to **48**, and boost the **Res** up to **99**. Adjust the **Attack** of the Amp Envelope to just over halfway, turn the **Decay** up to **100**, the **Sustain** full on and the **Release** to **50**. Now, turn the Velocity control of the **F.Env** off. Let's get LFO 1 in on the action to liven things up. Select **F.Freq** as the **Destination**, and adjust the **Amount** to **36**.

3 > Set LFO 1's **Rate** to **36**. As you've no doubt noticed, much of the effect lies in the high resonance setting of our filter. Let's tweak a little more. Set LFO 2 to modulate **Osc 1,2** at a **Rate** of **36**. Now, turn the **Amount** up to about **14**. Not too much, or you'll have one seasick Cylon! Try adding a bit of heavy chorus/flange (also with a **Rate** of **36**) for a little more grit. So say we all!

> make music now / sounds of sci-fi ii

> Step by step Transformers!



1 > The grinding machine noise of the Transformers is one of the most impressive pieces of cinematic sound design ever made. It draws upon synthesis, effects and audio editing. We'll start by working on the first part using a sophisticated subtractive synth, such as Logic Pro's ES2. You can use any synth of your choice, but be sure it offers noise, FM and at least two envelope generators.

2 > Let's select a patch that already has some of the necessary modulations set up: **FM Drive** should do the trick nicely. Load it up. It doesn't sound anything like a Transformer yet. Rest assured, though, it will. Let's look at Oscillator 1. We're in FM mode, and that's good, but let's crank up the modulation using the waveform dial. Just turn it all the way up, as we have here.

3 > Turn to Oscillator 2 and reduce its overall pitch to **-24**. Now we need to adjust the waveform. Currently, a sine wave is active. Instead of turning the knob to select one of the obvious waveforms, click on the word **sine** and scroll over it until you find the waveform called **mel**. Once you've done that, activate the third oscillator and select the **Noise** wave.



4 > All we're hearing is the first oscillator, so adjust the balance between them with the triangular mixer to the right. Grab the little square and drag it to the middle of the vertical line. You should now hear a bit of noise, too. Let's move to the Filter section. We're only going to use one filter, so grab the **Blend** handle and slide it all the way to the right, just as we have here.

5 > Change the Filter's mode to **Hi** and turn the **Cutoff** all the way down. Keep the Resonance where it is, but reduce the **Drive** to just over the halfway point. Note that Env2 is assigned to Cutoff 2. Change that to **Cutoff 1**, and decrease the amount of modulation a little. Increase Env 2's **Attack** to over halfway, and do likewise with the **Decay**. Turn the **Time** and **Sustain** to **0**, and **Release** to 0.24ms.

6 > Give Env 3's **Attack** a little nudge and turn the **Decay** up to **2200ms**. Also, bring the **Sustain** and **Release** down. Well, now our sound is changing, but it's not exactly, er, transforming! Return to the **Router** and assign the **LFO 1** slot to **Cutoff 1**, then turn the modulation amount all the way up. Find the LFO 1 section and change its waveform to the second pulse wave. Next, set the LFO rate to **4.800Hz**.



7 > Return to the **Router** and select an unused slot to assign **Env 3** to modulate **Pitch 1**. To really sell the effect, we need a bit of ES2's Flanger, so turn it on, crank the **Intensity** up to about **70** and turn the **Speed** all the way down. You should now be pretty close to the classic Transformer effect. You can get even closer by using an EQ to reduce the lows and highs, then boost the midrange.

8 > That's just one element of the sound. If we want to give the illusion of grinding, shifting machinery, we need to bend some metal! We record a chain in a metal bowl, a rattling tool box, ratchets and drills, then chop up the audio and load it into EXS24. We've included the raw samples on the **cm** DVD, so you can map them in the sampler of your choice. A bit of pitch-shifting and we're ready to go.

9 > When you're familiar with the samples, record a performance into your host, but don't worry about precision - these are chaotic noises! Add compression and reverb, too. Now layer in a note from your synth effect. You might need to tweak the envelopes, and experiment with different notes and arrangements of the samples for variations on the theme. While you're at it, watch out for Decepticons!

How the frak did they do that?

We lay bare some of the unusual techniques used to create some very familiar sounds

DEVILISH DESTRUCTION

You'd think that the sound of an explosion would be pretty easy to come by, particularly in Hollywood, the home of slam-bang action. Yet, sometimes a scene calls for something outside the norm. Such was the case when a Klingon ship obliterated the long-lost Voyager probe (which apparently wasn't the same Voyager that would eventually return as V'ger) in *Star Trek V*. Listen closely and you might detect the sounds of a woman screaming and a certain Warner Brothers' Tasmanian Devil!

MAGNETIC PERSONALITY

One of the coolest bits of sound design we've heard in recent years has to be the metallic, chattering sound of Reedman from *Transformers: Rise of the Fallen*. Making the noise was simplicity itself. It is little more than the sound that occurs when hematite magnets bang into one another. This particular type of magnet will bounce off one another repeatedly, resulting in a sort of clattering buzz.

CHAIN REACTION

Spider-Man 2's sound editor Paul Ottosson assayed the audio effect for Octavius' extraneous aluminium arms with recordings of heavy-duty motorcycle chains. He doused them in acid to provide a more metallic timbre, before rolling and throwing them around the soundstage. For the sound of the tentacles retracting, he called upon that old standby, heavy-gauge piano wires, which were pulled across other metallic objects.

GOIN' BUGGY

The slamming desert buggy chase that sets up *Star Trek: Nemesis* presented its sound designers with a unique challenge - they needed to create a sound for the futuristic dune buggy that didn't just come across like an old-fashioned combustion engine. The sound in question was derived from recordings of whining jet engines, animal noises and a cigarette racing boat, believe it or not.

RAZOR SHARP THINKING

Ben Burtt is quite obviously a master at transforming mundane, organic sounds into alien, otherworldly effects. A case in point is the rich, textural sound of the Battle Droid vehicles heard in *Star Wars: Episode I - The Phantom Menace*, which was created by pitch-shifting recordings of an electric shaver buzzing around the inside of a metal salad bowl!

GO NUTS!

You might be surprised at how many sound effects have their origins in the kitchen. One of our favourite queasy cuisine effects came from *Terminator 2: Judgement Day*. In one of the opening shots, a terminator's foot comes down on a human skull amid the debris of the post holocaust landscape. Would you believe that sound was made with a metal plate crunching a pistachio? Well, it's true.

ETHEREAL ALIENS

One very easy and economical way to make new sounds is to raid your cupboards! This is precisely what sound designer Gary Rydstrom did when he was called upon to create the audio effect for the glowing aliens in *Cocoon*. The sound in question made by rubbing the rims of crystal champagne glasses, altering the pitch of the recorded audio and adding some echoes. cm



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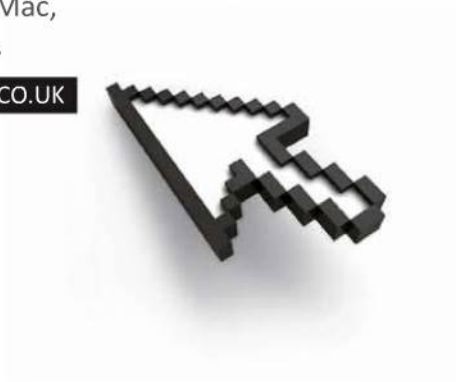


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What is the Matrix?

We check out the latest version of the amazing Renoise tracker, focusing on the brand new Pattern Matrix



> With the demo of Renoise 2.5 available for download (www.renoise.com), it's time take a closer look at its new features. The numerical rise from version 2.1 directly to 2.5 may seem like a big one, but it's justified by the wealth of gadgets the developers have added to what is already a superb tracker.

We'll be looking at what is, in visual terms, the most immediately obvious addition to v2.5: the Pattern Matrix. This gives you a visual representation of how the note information in your song is laid out. Not only that, but it enables

you to copy, paste and do just about everything else needed to sequence a song. Probably the most welcome feature is the ability to mute tracks depending on their position in the sequence. This makes it extremely easy to drop parts in and out while retaining all your pattern data.

To use the Pattern Matrix, simply click the **PM** button at the top of the Pattern Sequencer, whereupon you'll be greeted with a colour-coded grid full of pattern information. The colour of tracks and, indeed, individual

blocks can be customised to suit your needs, so if you've been aching to see all your drum tracks in a particular shade of red, ache no more!

Next issue, we'll take a look at more of the new stuff in Renoise 2.5, including the awesome Meta Device cross-track routing, but until then, we're going to sequence a song we pit together back in **cm141**. If you don't have the file immediately to hand, you can find it on the **cm DVD**, in the **Totally Trackers** folder. You'll also need the ZebraCM plug-in, which you'll find in the **CM Studio** folder on this month's disc.

>Step by step

Using the Pattern Matrix in Renoise 2.5



1 > Load up our work-in-progress song (**CM_trackers_tutorial141**) and call up the Pattern Matrix by clicking the **PM** button. You should see seven coloured tracks, with a diagonally-shaded master track and two blank Send tracks. You can change the colours of the various tracks to suit by clicking the colour rectangle below the track names.



2 > Press **Play** to start the song rolling. Using the middle mouse button (or **Alt** and the left mouse button), click each of the seven tracks in turn to mute and unmute them, until you have a good basis for the intro to your song. We'll ultimately build up our whole sequence like this, just using the mute feature.



3 > Hit the 'clone pattern' icon (two sheets of paper) to insert a copy of the current pattern. Unmute one or two other tracks to bring in the various elements. By doing this, we're keeping vital pattern data safe, so that it can be brought in and out with speed and ease later on.



4 > Repeat the previous step and carry on building up your song by bringing tracks in and out from the full original pattern. To get a closer look at the Pattern Matrix, use the zoom icons under the **PM** button. Left-clicking adjusts the height, right-clicking adjusts the width.



5 > Another great way to see how your track is structured is to switch on **Visualize Repeating Slots**, which can be found under the right-mouse button context menu. This feature adds an infinity symbol to any tracks that have information that's repeated from before. Tracks also become darker the longer they are repeated, which is pretty neat.



6 > As you build up your track, it's useful to be able to quickly flick between patterns, which is done by rocking the mouse wheel over the Matrix. For this to work, you have to have the 'scroll' button at the top activated. Load **CM_trackers_tutorial_24** to see what we did with our eight patterns just using the mute/unmute method. **cm**

Melodic phrasing

We're going back to basics, taking a look at one of the fundamental elements of all music: the tune

> Over the next few issues, we're going to strip things right back, with a look at melody (otherwise known as the tune or riff). Even with all of the music technology we have at our disposal, the most natural form of musical communication is to sing a few notes, whether a tune, a synth lead or a bass riff. Mind you, as this page is dedicated to increasing your practical knowledge of music theory, we're going to stick in a few ideas about the nuts and bolts of how music may be conceptualised.

The chromatic scale

When you sing, unless you're very hung up about doing it 'in tune' and hitting the 'right' notes, your voice can wander anywhere, to any pitch in your vocal range - you can slide about, not really landing on what we'd normally call a note. These indeterminate pitches can have a place in music, but we're going to keep to the simplest, most immediately useful elements here and restrict our thinking to the 12 notes of the Western chromatic scale.

The evolution of this scale took hundreds of years, which we don't have space to cover here, but suffice to say we can use it to construct the major and minor scales used in most Western music in up to 12 different keys. If you only have a hazy idea of what this might mean, don't worry - your understanding should gradually fill out over the next few issues.

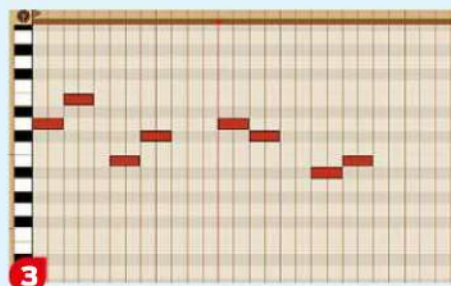
Previously, as we explored the construction of chords, we found that the intervals used in them came from the natural vibrations of real-world objects, such as strings, pipes and so on. Similarly, the intervals used in the

"Before we even get as far as considering a whole scale, we can construct simple melodic shapes with just a few intervals"

construction of scales (and hence melodies) are equally natural, although our modern tuning only approximates these natural frequencies.

Musical building blocks

The most familiar scales are constructed out of two basic intervals known in the UK as tones and semitones, and in the US as whole and half steps. If you look at a piano keyboard (Fig 1 provides a convenient illustration if you don't have one to hand right now), every move up or down the keyboard represents a semitone (or half step) change in pitch, whether white key to black key, black to white or white to white

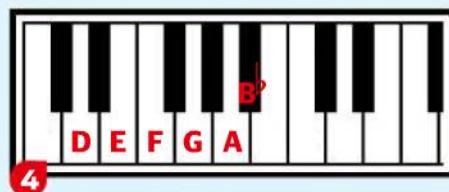
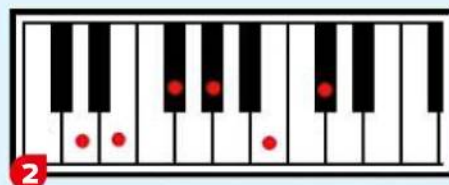


(where there is no intervening black key). Naturally, tones (or whole steps) are twice the distance apart and so occur when playing any two keys that have another key separating them, regardless of whether they're black or white. Fig 2 shows several examples of tone intervals, while Fig 3 shows both tones and semitones as seen in a sequencer.

Before we even get as far as considering a whole scale, we can start to construct simple melodic shapes with just a few intervals. Let's take the notes D, E and F as a starting point (see

Fig 4). Play around with these notes until you come up with a simple phrase or riff consisting of just a few notes. For the sake of example, we'll just stick to a pattern of the three notes ascending from D to F, but feel free to substitute this starting point for one of your own.

Our little riff contains a move upwards of a tone, followed by another of a semitone, and these intervals are part of its intrinsic sound. You can of course repeat this pattern, but after a while, the ear seems to want a change to provide a little variety. You can try reproducing the pattern with the next notes higher (E, F and G), though it will sound different because the interval structure is now a semitone followed by a tone. If you like this, fine, but it won't do if you're looking to repeat the riff exactly. F, G and A are all a tone apart, which creates further variation, but to recreate our riff exactly, we need to use the same intervals. This repeated



1: A music keyboard (just in case you've never seen one before!) - each note is a semitone away from its neighbour 2: The interval of a tone is created between any two not-quite-adjacent notes 3: It's easy to distinguish tones and semitones in a piano roll editor 4: The notes used in our riff continuation exercise

pattern could occur anywhere on the keyboard, but we suggest starting on G, going to A, then using B^b, which is, as you can see, just a semitone above the A. Why we are calling it B^b ("B flat" rather than A sharp, or A[#]) is another story that we'll get into gradually over the course of the next few issues.

Of course, it's not artistically essential that you always reproduce melodic shapes with exactly the same intervals - indeed, it can be a creative tool to vary and develop them. However, with a working knowledge and awareness of intervals, you will be more in control of the process.

Practise makes perfect

You may not have the keyboard skills to put these ideas to use immediately with any kind of fluency, but this is where technology can come to your aid, as once you have a phrase assembled in a MIDI editor, you can copy and transpose it up or down, always keeping the same intervals until you find a pleasing continuation. The editor is also a useful place to experiment with changing the intervals in a melody by simply dragging certain notes in the phrase up and down.

And finally, as we hinted last issue, it can be really useful to have at least a basic understanding of staff notation to help you comprehend music theory that little bit better. Therefore, although we haven't included any notation this time, we will gradually and gently introduce this form of musical writing, starting next month (you have been warned!), as we begin to explore scales. **cm**

Cycles (within cycles (within cycles))



rachMiel breaks down the walls between the physical world and the imagination by applying cyclical models to music making

rachMiel



rachMiel has spent the better part of a decade studying composition in America and Germany. A recovering atonalist,

his musical influences range from Frank Zappa, Karlheinz Stockhausen and North Indian classical drumming to 60s pop, horror movie soundtracks, avant electronica and, above all, silence.

> **Cycles are periodically repeated sequences of events, derived from the Greek word 'kyklos' (meaning circle or wheel). We're surrounded by cycles, yet also simultaneously embedded in them. For example, consider your body as it sits there reading this. Your heart is beating in a sinus rhythm, your blood pulsing in sync with your heart, your lungs bellowing your breath in/out/in/out and your brain generating a set of overlapping waves (mostly beta while reading). On the micro level, similar processes are occurring in each of your billions upon billions of cells. In short, your body is one big, exquisitely complex groove machine!**

Now let's move outside our skin. The planet you reside on rotates periodically about its axis (day) and revolves about the Sun (year). Tides ebb and flow due to the gravitational forces of the Sun and Moon. The photons bouncing off the page you're looking at are as much cyclical waves as particles. Way down on the quantum level, electrons are spinning in orbital rings around their atoms' nuclei. And way up on the cosmological level, galaxies, galaxy clusters, perhaps parallel universes are orbiting each other. Are you convinced now?

More than any other form of expression, though, music is a cyclic phenomenon, or even a celebration of cycles (within cycles (within cycles (etc))). The very stuff of music - sound - is composed of overlapping periodic waves. In the spirit of integral serialism - that wondrous, short-lived compositional style in which all aspects of a piece were determined by a single underlying set of numeric proportions - composers can use cyclicity to control every parameter of their music, from pitch (melody, harmony), to duration (rhythm, form), to timbre (sound), to dynamics (volume, envelopes), to space (stereo location, reverberation).

Being taken for a ride

How can you do all this? Well, that's up to you and your imagination. Here are some ideas to get you started. You could use Fourier analysis to break down one cycle of a note into its constituent sine waves, then mirror the pattern of these waves at various levels throughout the piece: phrase, verse, section, entire piece. You can create a harmonic series (as I'll show you on the facing page) and use the cycle lengths of the individual members of the series to generate formal durations of notes, envelopes, sections, movements, etc. Use the orbital cycles in a solar system (multiple-moon planet, galaxy cluster, etc) to determine the pitch (frequency) system that underlies the tonality of a composition. And so on and so forth, pretty much ad infinitum.

"More than any other form of expression, though, music is a cyclic phenomenon, or even a celebration of cycles"

How (and why) I made the audio examples

For the audio examples on the DVD, I chose to apply cyclicity to a set of nested/overlapping sine waves. Why sine waves? Because of their purity. They are the only waves that have no overtones, which makes them ideal building blocks for constructing all manner of timbres. In fact, the Fourier theorem states that any sound - from rimshot to bowed violin to guttural shriek - can be constructed by overlapping sine waves of certain specific frequencies, amplitudes, and phases.

To build a sine wave machine capable of illustrating cyclicity, I turned to Native Instruments Reaktor. The ensemble *cycLes* (also on the DVD) was the fruit of my labours. *cycLes.ens* is a bank of 24 sine wave generators. Each generator has three main

controls: *harMonic*, *duraTion*, and *panSpeed*. In addition, there are two main global controls that apply to all of the sine wave banks: *baseFreq* and *baseDur*.

baseFreq is the frequency (in Hz) of the first (lowest) harmonic, *harMonic 1*. *baseDur* is the duration (in seconds) of the major (longest) amplitude cycle of all the sine waves being played, *duRation 1*. You can think of *baseDur* as the number of seconds it takes the entire bank of sine waves to loop.

harMonic is the integer harmonic number of the sine wave: 1, 2, 3, etc. The frequency of a *harMonic* is determined by *harMonic* x *baseFreq*. For example, the frequency of the fifth harmonic of a base frequency of 60Hz is 300Hz (5 x 60).

duRation specifies the number of (evenly spaced) sine wave notes that play within *baseDur* seconds. The length of one note is determined by: $1/\text{duraTion} \times \text{baseDur}$. The length of one note with *duraTion* set to 6 and *baseDur* to 60 is 10 seconds ($1/6 \times 60$). This means that six evenly spaced ten-second notes - each with a five-second fade in and five-second fade out - would play within the base duration of 60 seconds.

panSpeed specifies the speed at which the sine wave pans from left to right in the stereo field. The duration of one full panning cycle (from left to right to left) is determined by: $1/\text{panSpeed} \times \text{baseDur}$. The duration of one cycle with *panSpeed* set to 6 and *baseDur* to 60 is 10 seconds ($1/6 \times 60$).

>Step by step

Music from cycles



- 1** > The first example, **Cycles_1.wav**, consists of four sine waves set to (**harmonic**/cycle **duration**/**panSpeed**): 1/1/2, 2/2/3, 3/3/4, 4/4/5. The base frequency (**baseFreq**) is 60Hz and base duration (**baseDur**) is 20 seconds. (For an explanation of how I created these examples and what the parameter values actually mean, see the boxout on the previous page).



- 2** > Next up, **Cycles_2.wav**, which consists of eight sine waves set to (**harmonic**/**duration**/**panSpeed**): 1/1/2, 2/2/3, 3/3/4, 4/4/5, 5/5/6, 6/6/7, 7/7/8, 8/8/9. The base frequency remains at 60Hz, but the base duration has risen to 40 seconds. Here, you can see the **BaseFreq** and **baseDur** parameters over on the left-hand side of the interface.



- 3** > **Cycles_3.wav** consists of 12 sine waves set to (**harmonic**/**duration**/**panSpeed**): 1/1/2, 2/2/3, 3/3/4, 4/4/5, 5/5/6, 6/6/7, 7/7/8, 8/8/9, 9/9/10, 10/10/11, 11/11/12, 12/12/13. The base frequency is again kept at 60Hz, but the base duration has again risen - this time to 60 seconds. You should begin to notice more harmonic content now.



- 4** > This one, **Cycles_4.wav**, contains 16 sine waves set to (**harmonic**/**duration**/**panSpeed**): 1/1/2, 2/2/3, 3/3/4, 4/4/5, 5/5/6, 6/6/7, 7/7/8, 8/8/9, 9/9/10, 10/10/11, 11/11/12, 12/12/13, 13/13/14, 14/14/15, 15/15/16, 16/16/17. The base frequency remains at 60Hz, with the base duration rising to 80 seconds.



- 5** > The fifth example, **Cycles_5.wav**, comprises 20 sine waves set to (**harmonic**/**duration**/**panSpeed**): 1/1/2, 2/2/3, 3/3/4, 4/4/5, 5/5/6, 6/6/7, 7/7/8, 8/8/9, 9/9/10, 10/10/11, 11/11/12, 12/12/13, 13/13/14, 14/14/15, 15/15/16, 16/16/17, 17/17/18, 18/18/19, 19/19/20, 20/20/21. The base frequency remains 60Hz, but the base duration has now risen to 100 seconds.



- 6** > **cycles_6.wav** consists of the full 24 sine waves, set to (**harmonic**/**duration**/**panSpeed**): 1/1/2, 2/2/3, 3/3/4, 4/4/5, 5/5/6, 6/6/7, 7/7/8, 8/8/9, 9/9/10, 10/10/11, 11/11/12, 12/12/13, 13/13/14, 14/14/15, 15/15/16, 16/16/17, 17/17/18, 18/18/19, 19/19/20, 20/20/21, 21/21/22, 22/22/23, 23/23/24, 24/24/25. The base frequency remains 60Hz and the base duration now stands at 120 seconds.



- 7** > The first six examples all adhere to the following scheme (**harmonic**/**duration**/**panSpeed**): 1/1/2, 2/2/3, 3/3/4, 4/4/5, etc. Let's mix things up a bit. **Cycles_7.wav** features 12 sine waves set to: 1/9/5, 2/16/9, 3/10/11, 4/5/17, 5/14/12, 6/19/18, 7/11/20, 8/6/13, 9/15/19, 10/19/21, 11/12/22, 12/7/23. The base frequency is 60Hz, with a duration of 30 seconds.



- 8** > **Cycles_8.wav** also consists of 12 sine waves, but set to values that include higher harmonic frequencies (**harmonic**/**duration**/**panSpeed**): 1/3/2, 2/2/13, 3/13/18, 4/7/10, 5/15/5, 6/20/3, 8/10/2, 10/6/13, 13/10/20, 16/17/22, 20/20/23, 24/22/23. The base frequency is 60Hz and the base duration is 60 seconds.



- 9** > Finally, **Cycles_9.wav** contains 12 sine waves set to values that include even higher harmonic frequencies than the previous examples (**harmonic**/**duration**/**panSpeed**): 1/14/19, 2/7/10, 3/21/23, 4/29/29, 5/15/8, 6/25/16, 9/31/13, 13/33/7, 17/34/8, 22/35/22, 28/36/11, 36/18/24. Here, the base frequency is 60Hz and the base duration is now 120 seconds. **cm**

Re-vox inhumana

Our resident sound design guru tackles the holy grail of synthesis: convincingly emulating the human voice



> **It's been a dream of many synthesists to recreate that most elusive of instruments, the human voice. Sound designers have been provided with a handful of tools with which to reach this lofty and difficult goal, ranging from vocoders to articulate, sample-based 'singing' software. However, rather than create an obviously electronic voice that can sing, here we're going to attempt to create a convincing choir sound from the ground up.**

Like a lot of electronic musicians, I'm a sucker for choirs, though I am more interested in those

of the artificial variety than symphonic ensembles. From the first time I heard the Mellotron sounds on Tangerine Dream and King Crimson records, I've desired access to my own choir that was playable from the keyboard. In the intervening decades, I've recorded a number of human vocalists (including myself!) and put them to work in this capacity.

However, I've also always really wanted to create a choir entirely within the domain of synthesis. I've tried lots of methods over the years, with varying success, and was content

until I stumbled upon a factory preset in Symbolic Sound's Kyma. This particular sound was created using additive synthesis and is impressively convincing. I've included a sample on the disc, **KymaVox.wav**, so you can hear exactly what I mean.

Needless to say, I pored over the patch, trying to figure out how they did it. I didn't want to copy it - I simply wanted to learn from it, and apply it to my own designs. As you'll see, I came up with something not too dissimilar, even if I did resort to a bit of brute force at the end!

>Step by step

Creating choir patches with additive synthesis



1 > If you haven't already listened to **KymaVox.wav** on the DVD, do so now. It's just a few notes of the additive choir patch made using Symbolic Sound's high-end sound design engine. I want to create something similar to this using a native soft synth. KarmaFX Synth (get the demo from karmafx.net) has an additive oscillator, so let's try that.



2 > As is usually the case, I want to start with a very basic patch, and I've included the **ScotsBasic.fxp** file on the DVD to get you started. Load it into KarmaFX Synth. Currently, it's just a plain sine wave. Still, there's very little to get in our way, and since we'll be using additive synthesis, we won't need subtractive elements such as filters.



3 > The easiest way to call up an additive oscillator is to simply select it from the existing oscillator's menu bar - in this case, that would be Generator1. Click on the word **Osc 1** in the title bar to reveal the other variations on the Generator. Select **Additive** from the list to get things going.



4 > Still, it's only showing us a sine wave in the waveform display, and you may have noticed that it sounds exactly the same as before. That's because it's only using a single harmonic: the fundamental. When you only play the fundamental, you get a sine wave. Turn the **Monics** knob up to **32**. Note that the value is shown in the lower-right corner of the smaller display.



5 > We can draw in the waveform display, but we need more precise control, so click on the middle button just to the left of the **Monics** knob. This displays the harmonics individually. Notice that only the lowest possible harmonic is displayed. That's the fundamental. It's usually the loudest harmonic in a sound, and determines its root pitch.



6 > The Kyma sound uses only eight tightly-controlled harmonics. We're going to take an easier approach. This is why I had you set the **Monics** to **32**. We're going to draw the amplitudes manually. Let's start by reducing the fundamental to a magnitude of **10**. Click then drag up and down on it to change this. Set the Controller1 module's **Mode** to **Poly16**.

RECOMMENDED LISTENING

WENDY CARLOS, *BEAUTY IN THE BEAST*

Though most of us know her from the exquisite analogue sounds of *Switched On Bach* and *A Clockwork Orange*, this pioneering electronic musician later embraced additive synthesis. She eventually put it to use in her own compositions, of which this album of unusual tunings and additive emulations is undoubtedly the finest example.

PRO TIPS

TOWARDS INFINITY

If you use samples for your choir, you'll quickly discover that they're next to impossible to loop. Few looping tools are up to the task, unfortunately. One shining light is Antares' *Infinity*, which may be the only application that can do it well, but it hasn't been updated for years. You can still buy it, but it'll only run on Mac OS9. Like many seasoned sound designers, I keep an old Mac around just for this program.

PRO TIPS

PAST IMPERFECT

The performance and intonation of even the most accomplished musician will, sometimes intentionally, be peppered with tiny imperfections. Notes will often sway just either side of the exact desired pitch, tempo and so on. Such imperfections are absolutely paramount in creating a convincing choir sound, though, so be sure to move your amplitude envelopes around with automation and make use of delay and pitch processors if you've got 'em.

GETTING MELODRAMATIC

I'd be remiss if I didn't recommend Celemony's miraculous Melodyne software as an ideal solution for whipping up realistic choir patches. It makes it ridiculously easy to create multi-part vocal harmonies using its grid-like approach. Even for those of us with, er, limited vocal abilities. If you can only sing a single note (and even then, it doesn't have to be in tune), you can push it around within the scale, building up bigger, more harmonic chords.

Scot Solida



Scot bought his first synth over a quarter of a century ago. A synthesist, sound designer and audio engineer of international repute, he's provided factory presets for many of the music software industry's most

acclaimed synths, samplers and drum machines, not to mention the **cm** Studio. On rare occasions, he manages to find time to make records for Beta-lactam Ring Records under the name Christus and the Cosmonauts.



7 > In additive synthesis, sounds are made by piling on sine waves, each with a different frequency and amplitude relative to the fundamental. Ideally, each would be a multiple of the fundamental, known as harmonics. The first few harmonics are the most important for our vocal sound, and should all be turned up to similar magnitudes, as shown above.



8 > I've created a sort of downward sweep, with the odd spike here and there. It takes some experimenting to find the right frequencies, but you can copy my version shown here. It doesn't need to be exact, just close. Be sure to stick in a couple of small grouped peaks like I have, and in similar places along the grid, as these will simulate vocal formants.



9 > If you've been triggering the sound we've constructed so far, you might be thinking that it isn't terribly voice-like. This is because we haven't created a suitable envelope yet. Let's turn to Modulator1, which is set up as an ADSR. Nudge the **Attack** to **11**, and the **Decay** and **Sustain** to around **49** or **50**. The **Release** knob should be set to **38** or so.



10 > Additive synths have envelopes for each partial, enabling us to adjust the pitch, phase and amplitude of each over time, but we're going to take a brute force approach, to add a bit of depth. Right-click the title bar of your oscillator and choose **Clone**. This will duplicate it with all your settings intact. Set the new one to show the harmonic display, too.



11 > Now we need to hear our second oscillator. Right-click a blank area and select **Amplifier>Mixer**. Right-click the Amplifier1 module and deselect **Generator1** as the **Input**. Next, select **Amplifier2** as the **Input** for Amplifier1. Right-click the title bar of the Mixer, then select both **Generator1** and **Generator2** as **Inputs**.



12 > Now that you have both oscillators sounding, you'll want to tweak the new one to vary slightly from the first. Try nudging the **Detune** knob and altering a few harmonics here and there. It'll never be as convincing as the one in Kyma, but it'll still sound pretty neat. Keep tweaking harmonics and explore other parameters until you get the ultimate choir sound! **cm**



The **cm** guide to **REAPER**

We show you how to install, set up and get started with Cockos' affordable, powerful and increasingly popular DAW for PC and Mac

> **Created by the developer of the ubiquitous Winamp media player, Reaper is a relatively recent arrival in the world of computer music. Over the last few years, though, it's evolved into one of the most dynamic DAWs around, and recently it became the official software for Harmonix' Rock Band Network, the system that enables third parties to create musical content for the popular rhythm action game.**

Reaper's sophistication is belied by its extremely attractive price tag (a bargainous \$60, unless you're using it to make more than \$20,000 a year, at which point you're obliged to buy the full \$225 license).

Another important factor is the fact that,

unlike its contemporaries, Reaper doesn't come with a huge library of preset sounds, samples and bundled instruments. In fact, it has some of the smallest installers around - at a mere 8MB for the largest version, downloading the latest update takes seconds and it only requires a tiny system footprint. In fact, you can even run it from a USB drive, if you feel so inclined.

Despite this resource-friendliness, the program is extremely powerful, enabling complex signal routing (including sidechaining of its bundled plug-ins), advanced automation and unified tracks that can be used for both audio and MIDI. A big part of the application's appeal is that it's compatible with the most popular plug-in formats, including VST, AU and

DXi, and is cross-platform, running happily on both PC and Mac. As such, it's ideal for those who need to switch between different platforms, a selling point enhanced by its very modest system requirements.

This combination of flexibility and power make it a great choice for those just starting out in music production, and in this tutorial, we'll show you step-by-step how to install and set up Reaper, and get you started with its myriad features. You'll find the installer for the non-expiring trial version on the **cm** DVD in the **Software\PC Software\Demo Software** and **Software\Mac Software\Demo Software** folders, or you can download the latest version from www.reaper.fm.

The tools of the trade



01 MAIN WINDOW TOOLBAR
This features all the buttons for Reaper's most commonly used functions, including file management and editing options

02 TRACK CONTROL PANELS
Access plug-in, recording and automation settings here

03 MAIN WINDOW AND EDIT AREA

For arranging audio and MIDI objects and automation

04 THE TIMELINE
This displays bars and beats by default, but can be customised

05 EDIT CURSOR
The standard DAW 'playback head', which can also be used to carry out certain editing functions

06 THE MIXER
Set the level of each track here. Also used for managing insert and send effects

07 TRANSPORT BAR
Your play and record functions are located here

08 AUTOMATION TRACK
These are used to modulate and control compatible

instrument, effect and track parameters

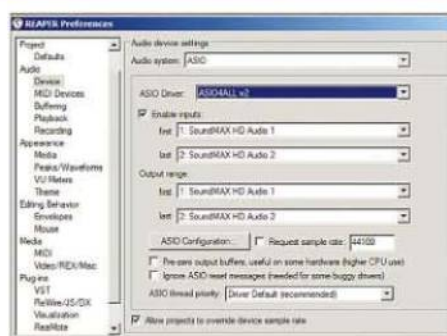
09 ZOOM CONTROLS
Get a closer look at the project with these horizontal and vertical zoom controls

10 AUDIO/MIDI ITEMS
The fundamental musical building blocks that make up your track

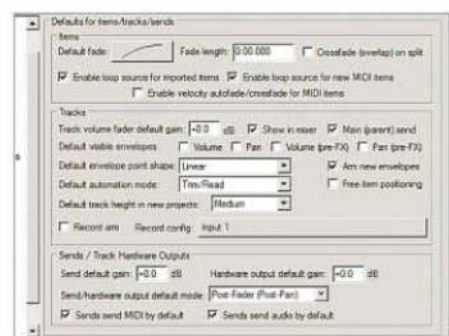
> Step by step Installation and setup



1 > Find the Reaper installer in **Software/Mac Software/Demo Software** and **Software/PC Software/Demo Software** on the **cm** DVD, or download it from www.reaper.fm. Run the installer, launch Reaper and click **OK** when the timer has counted down.



2 > The first thing to do is set up your audio driver, via **Options» Preferences» Audio» Devices**, or by clicking the audio device settings button at the top right-hand corner. PC users without an ASIO audio interface should use the **ASIO4ALL** driver in **Software/PC Software/Library**.



3 > In the **Project» Defaults** section, change the **Fade Length** to **0:00.000**. This stops Reaper from automatically fading the start of the audio, which can have a negative effect on your sounds, particularly when working with percussion. Click **OK** to leave the **Preferences** menu.



Get your game on and sell your music on the Rock Band Network, with the help of Reaper

Justin time

Over the past few years music-based video games like the Guitar Hero and Rock Band franchises have become hugely popular. Last year Rock Band creators Harmonix launched the Rock Band Network, a system whereby anyone can turn their music into tracks playable in the game, and then sell it online.

The software used to create the data needed by the game is called Magma, and it's a plug-in specifically for Reaper. We asked Reaper creator and all-round software guru Justin Frankel how this came about.

"Harmonix contacted us some time ago looking to both provide tools for their users to author Rock Band levels, as well as improve the tools they used themselves. We worked with Harmonix to add functionality that would make Reaper work well for Rock Band authoring. Most of that was general stuff, things that many users may need, and some of it was specific features for Rock Band. Reaper is really made for this sort of thing, as it's very flexible and provides lots of general purpose functionality that lets it be used and customised in many ways."

Is Justin looking to cooperate more with games publishers and other media creators in the future?

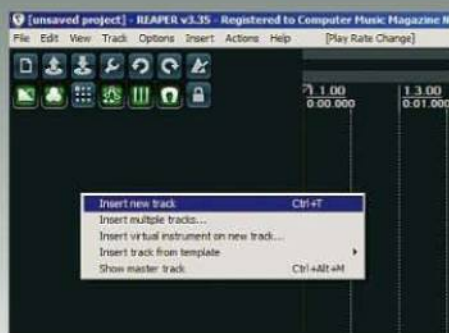
"Sure, when it makes sense," he affirms. "Our priority is to make the best possible software for audio and MIDI production, but we also enjoy improving Reaper in ways that make it suitable for more uses."

Finally, we understand Magma is so named because it's the source of rock, but why did Justin opt for the name Reaper? Is he a big Blue Oyster Cult fan, by any chance?

"Not a 'big' fan, but yeah, that song is good. More just about 'reaping' a harvest, really!"

That clears that up, then. Find out more about creating your own content for Rock Band at creators.rockband.com.

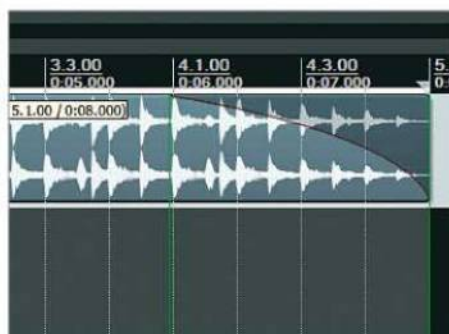
> Step by step Basic audio recording and editing



1 > Let's start by creating a new track. Right-click the track control panel area and select **Insert New Track**, or select **Track** from the **Insert** menu. We're going to record and edit some audio, but if you don't want to record anything, head straight to step 4.



6 > The **ReaperBeat.wav** drum loop plays at 120bpm, which is Reaper's default tempo. We can confirm that it's in time with the project by activating Reaper's metronome (click the **Metronome** icon in the main window toolbar). To change the tempo of the project, click the **BPM** field on the transport bar and enter a new value. We're going to stick with 120bpm here, though.



11 > We've already told Reaper that we don't want it to auto-fade our audio, so to manually add your own fades, simply drag the top right- or left-hand corners of an audio item. Reaper will change the audio item's waveform display to reflect the change caused by the fade, as shown.



2 > To set the track up to record audio, click the volume meter and select the physical input you want to record from. Then click the record arm (**Ar**) button to get the track ready for recording. To start recording, click the red record button on the transport bar. Reaper will immediately start recording.



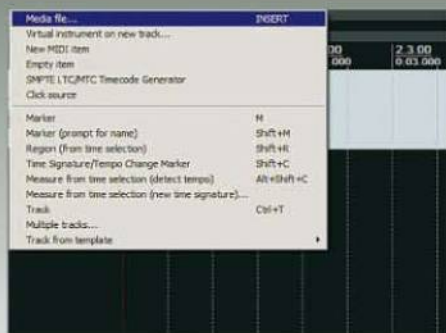
7 > Click the beat half way through, and press **S** to slice it at the edit cursor position. Dragging the left or right edges of an 'audio item' (Reaper's name for a region or part) moves its start and end points - if you lengthen it past its original length, Reaper will automatically loop it.



12 > If you move an audio item so that it overlaps with another audio item on the same track, Reaper will automatically crossfade between the two. You can adjust the length of this by dragging its left- or right-hand edge. What's more, if you glue the items together, the crossfade will become part of the resulting audio item.



3 > When you're done, click the stop button on the transport bar. A dialog will appear, letting you know that you've recorded a new piece of audio. This will appear after every recording unless you deactivate **Prompt To Save/Delete New Files: On Stop**. Click **Save All** to keep the recorded audio.



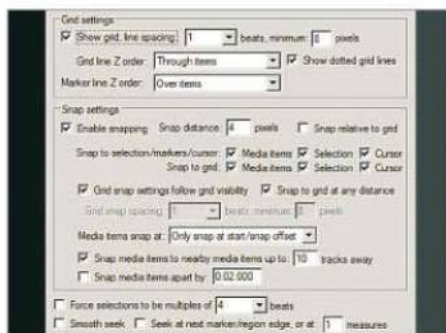
4 > To import an audio file, you can simply drag it from your hard drive into Reaper, or select **Insert>Media File** and select a file. The audio will be placed on the selected track at the edit cursor position. You can move the edit cursor by clicking anywhere in the 'main window and edit area', as Cockos slightly confusingly call it.



5 > Copy the **Tutorial Files/Reaper** folder from the DVD onto your hard drive and drag **ReaperBeat.wav** onto a track. To loop part of the project, drag under the track in the main window and edit area. To activate loop mode, simply click the **Loop** button in the transport bar.



8 > You can **Cut**, **Copy** and **Paste** audio using the commands in the **Edit** menu or by using **Ctrl/Cmnd+X**, **C** and **V**. Holding **Shift** while clicking audio items selects several at the same time. When multiple audio items are select you can join them together by selecting **Edit>Glue Selected Items**.



9 > The edit cursor will always snap to the nearest beat - audio does the same. You can change the snap resolution by selecting **Options>Snap/Grid Settings** or pressing **Alt+I** to bring up the **Snap/Grid Settings**, and adjusting the value in the **Show Grid, Line Spacing** field.

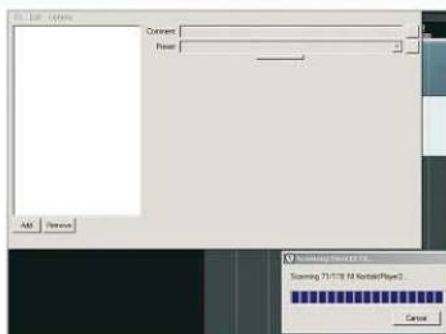


10 > Click anywhere outside the snap window to close it. Having snap activated isn't ideal for fine editing work, so deactivate it by pressing **Alt+S** or clicking the magnet icon in the toolbar. For really fine editing, use the horizontal zoom controls at the bottom right-hand corner of the main window and edit area.

> Step by step Working with MIDI and plug-ins



1 > Delete everything in the project by pressing **Ctrl/Cmnd+A**, then **Delete**. Now drag the **ReaperBeat** sample into the project again, and set Reaper to **Loop** the beat. We're going to add a melody. Create a new track like before - it'll appear below the first track. Click the meter and you'll see that you can choose MIDI inputs as well as audio inputs.

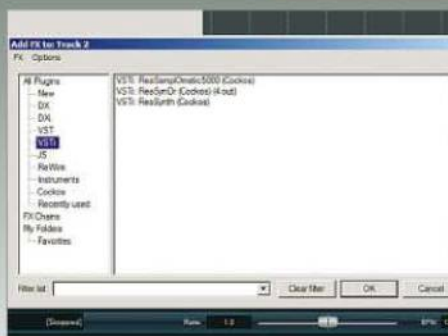


2 > If you need to set up a MIDI device, head to the **Audio>MIDI Devices** section of the **Preferences** menu. Let's add a virtual instrument to trigger with our MIDI data. Click the **FX** button on the track. Reaper will scan your VST plug-ins folder for instruments and effects.



3 > If Reaper hasn't located your VST plug-ins folder correctly, you can set it manually in the **Plug-ins/VST** section of the **Preferences** menu. AU and DXi plug-ins are also supported by Reaper, but these should be located in their default folders. Once Reaper has finished scanning, you'll be presented with a list of available plug-ins, like so.

> Step by step Working with MIDI and plug-ins (continued)



4 > Plug-ins are categorised through the plug-in type filters on the left of the window, or by using the **Filter List** field at the bottom left-hand corner of the window. Select **VSTi**. Even if you don't have any third party plug-ins installed, you'll see Reaper's very own ReaSynth. Double-click it to add it to the track.



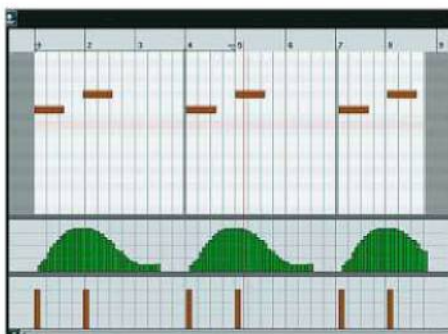
5 > Close the FX window. Recording MIDI works just like recording audio. It's also possible to create an empty MIDI item by selecting **Insert>New MIDI Item**. Do this, then double-click the item to edit it in Reaper's grid editor, which will open in a new window.



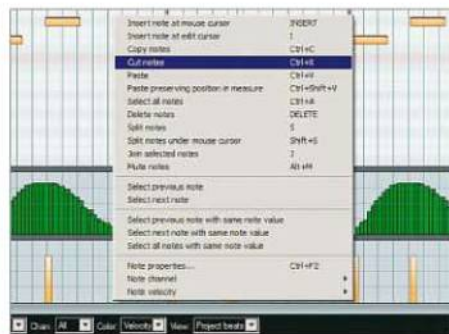
6 > To create notes, simply double-click on the grid. You can change a note's start and end positions by dragging its left- or right-hand edges. You can also change a note's velocity by dragging the velocity level displayed on it up or down, or by dragging the vertical bars in the lane below the main grid. Double-clicking a note will delete it.



7 > You can change the MIDI data displayed in the lane below the notes by clicking the drop-down menu and choosing a parameter. Display and edit multiple parameters at once by clicking the **+** icon to the right of the menu. This creates a new lane that you can assign to the parameter or MIDI CC of your choice.



8 > A MIDI item can be made longer by dragging its right-hand edge. The MIDI pattern within the item will repeat when the clip is lengthened beyond its end point, and an adjustable grey bar will appear, representing the loop point.



9 > To select multiple MIDI notes, drag over them with the right mouse button held. Right-clicking once brings up a menu containing various editing functions, and you'll find even more options at the top left-hand corner of the edit window.

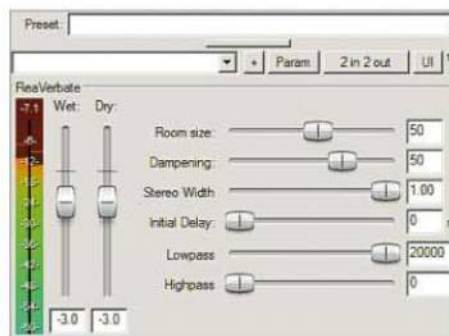
POWER TIP

>Get more from Reaper with the CM Studio

Reaper has several built-in effects, including both the ReaPlugs suite and the simpler JS effects. To immediately increase your options, though, head to the **CM Studio** folder on the **cm DVD**. Here, you'll find dozens of instruments and effects in PC/Mac VST and Mac Audio Units formats, including exclusive plug-ins from some of the finest developers around, including LinPlug, u-he, Sugar Bytes, Ohm Force and many more. Also in the **CM Studio** folder are step-by-step instructions on how to get these plug-ins installed.



10 > Copy the simple one-bar pattern shown here and close the MIDI grid edit window. Let's use some of Reaper's effects to make this sound much more interesting. Click the **FX** button on the MIDI track and the FX menu will appear. Let's start by altering the synth sound slightly. Turn the **Sawtooth Mix** parameter up to **0.50**, adding a sawtooth wave to the synth's output.



11 > To apply an effect, click the **Add** button at the bottom left-hand corner of the window. Select **VST** from the list on the left-hand side of the window. Double-click **ReaVerbate** to add some reverb to the synth line. Use the various parameters displayed on the effect's interface to tweak the sound.

Reaper tips and tricks

WINDOW OF OPPORTUNITY

These days, many DAWs eschew multiple floating windows and instead opt for a single-window approach. Reaper gives you the best of both worlds: by default, the MIDI grid editor, performance meter and so forth all open in new windows. However, they can also be docked at the bottom of the screen by right-clicking them and selecting the **Dock** option.

SYSTEM OVERLOAD

When using lots of plug-in instruments and effects, you may find yourself running out of CPU power. Thankfully, Reaper's Performance Meter window offers the most advanced performance analysis we've seen, showing you exactly which tracks are consuming the most power. It can be accessed from the **View** window.

CHAINED UP

One cool way to streamline your workflow is to save commonly-used combinations of instruments or effects as FX chains. To do this, right-click the FX window and select **Save FX Chain**. These can then be added to any track by right-clicking it and selecting **Add FX Chain**.

IN A JAM

Stuck for inspiration? Reaper includes a great tool for online collaboration in the shape of ReaNINJAM. This plug-in enables users to jam together over the internet. For more details, head to www.ninjam.com, where you can access the Ninjam community forum.

PITCH UP

If you're stuck with a dodgy vocal take, don't panic - you might be able to get away without re-recording it. Reaper includes a handy little plug-in called ReaTune, which works in a similar way to Antares Auto-Tune. Simply set the correction mode to a scale and key, and the plug-in will do the rest. Alternatively, the manual correction mode can be used for more in-depth pitch manipulation.

DOUBLE TAKE

Need to beef up a track in a hurry? Give Reaper's **Tracks»Duplicate Selected Tracks** function a whirl. This creates identical copies of any and all selected tracks, perfect for



Locating the most CPU-hungry tracks in your project is a breeze thanks to Reaper's Performance Meter window



Reaper enables you to use either a multi-window display, or opt for the single window approach, as shown here

doubling MIDI lines, or for performing parallel processing on audio parts.

CURVE BALL

Reaper offers a variety of different automation curves. To select a curve type, right-click an automation point and pick **Select Shape For All Selected Points** from the menu. You'll be presented with a choice of several well thought-out curve types, which can help make getting that perfect sweep or fade that little bit easier.

LOCKING UP

With complex projects, it's easy to get confused and edit items you might not mean to. In order to avoid this, check out Reaper's lock function. Open the **Appearance»Media** section of the **Preferences** menu and ensure that both **Locked** and **Unlocked** in the **Media Item Icons** panel are selected. All media items will now display a lock icon that enables you to fix their position.

CAUSING RIPPLES

Another useful feature when working with complex or longer projects is Reaper's ripple mode. This is activated by pressing **Alt+P**, or via the **Options»Ripple Editing** menu entry. With ripple edit mode activated, any audio object you move on any given track will also move everything else on that line.

TAKING A SAMPLE

One of Reaper's best-kept secrets is the ludicrously-named ReaSamplOmatic 5000 instrument. A basic sampler, it's nothing particularly out of the ordinary, but its modest CPU usage requirements and straightforward interface make it worth checking out. It can only load a single sample, but

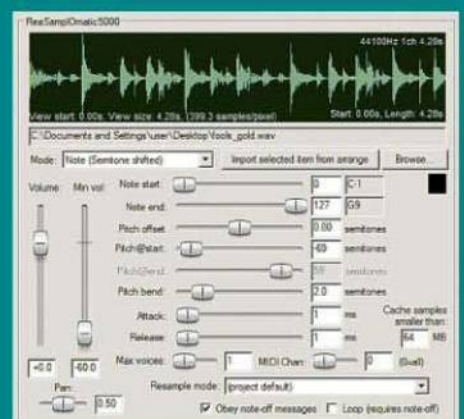
but you can use multiple instances of multisampled patches and drum kits.

POWER TRIP

If you're struggling to keep those CPU cycles down, consider using Reaper's clever **Render Selected Tracks To Stem Tracks (And Mute Originals)** function, in the **Track** menu. This quickly creates a bounced version of each track, including any effects processing. With the original tracks automatically muted, your CPU is freed up for other tasks.

CASH REGISTER

If you continue to use Reaper after the 30-day evaluation period, you really should really register it. Not only will this help fund development of the DAW and give you a nice, warm feeling inside, but once you've done it, you won't have to wait for the irritating countdown timer each time you launch it.cm



Save your most frequently used effects combinations as FX Chains, ready to be recalled in an instant

CULPRIT 1

We meet a rapidly rising star of production, who, having switched DAW mid album, is now determined to use one program for everything

> James Hannam certainly hit the ground, er, running with his debut album as Culprit 1 three years ago. *Running In Order* drew widespread critical acclaim. In fact, Radio 1 DJ Huw Stephens was so blown away that he signed him. Since then, James has kept himself busy remixing the likes of Kaiser Chiefs, Paul Hartnoll, The Automatic and - get this - the BBC National Orchestra of Wales and their recording of *Blue Letters from Tanganyika* by composer John Hardy. There aren't many producers who can boast that kind of CV! It's the kind of output that led one crazy journalist to note: "Culprit 1 could make a good tune using a half-eaten Toblerone and a lampshade." And when he started out, James did indeed have a very limited setup...

"I started with a keyboard and gradually built up from there," he recalls. "It was a kind of budget Roland W-30, but then I bought a Tascam 4-track and some monitors. I had some terrible keyboards. It all seems so ancient now, but it did enable me to record live stuff, which was a great help. After that, I did GCSE and A Level music, and was offered a place at the Royal Welsh College of Music & Drama. I enrolled on the compositional course, but there was a lot of music technology stuff also being taught on it."

James formulated his Culprit 1 master plan while living in the Cardiff area - and with so much music being created today, his is the kind of direct approach that we could all learn from. He simply realised that if he could get his music in front of the right people, and if it was good enough, he'd get noticed.

"I really benefited from growing up in quite a small place," he says. "Well, Cardiff is *relatively* small compared to London - where I would have just been lost - so I was able to network quite heavily. I'd work out which gigs certain people would be at, like Radio 1's Huw Stevens, then get someone to introduce me. It was a good way to get started, certainly. Wales also benefits from having a separate TV and radio network, so they were the ones who initially picked me up. Plus, as Radio 1 had its own Welsh show with Huw and

Bethan Elfyn, I was able to build a following, because they played me, then gave the music to Colin Murray and Annie Mac."

In the shadow of the valley

It was Annie Mac who affectionately labelled Culprit 1 "the DJ Shadow of Wales" on her Radio 1 show.

"I'm from Newport, which is really close to Bristol," says James. "Newport has been passed between England and Wales over the centuries, so I guess my accent is not that Welsh. Anyway, Annie Mac just came out with the DJ Shadow comment on Radio 1. At the time, I was delighted, but since then, anyone who I talk to mentions it. It has really split opinion. But I don't mind it, as he is my musical hero, especially with his first two albums. He's someone whose latest work I can't wait to hear about, and even if I don't like it, it still tends to be interesting. Just like that last thing he did - I think it was *Hyphy*, a compilation of local San Franciscan hip-hop - I didn't enjoy it, but it was interesting all the same. But certainly those two first albums by Shadow were probably my biggest influence."

And while we're on the subject, what other artists does James particularly like?

"At the moment there are three people I really rate," he notes. "There's Apparat from Berlin - anything he touches is amazing. He's doing some really great stuff, lots of collaborations, but anything he does has his stamp on it. I also still really like Four Tet - he's back on form with his latest album and I think he's one of the cleverest producers out there. The other person I really like is a piano player called Regina Spektor, who is this Russian Jewish lady from New York. So I tend to be influenced not only by electronic music but also music from elsewhere."

"I am also inspired by visual art," he continues. "I was lucky enough to have one of the tracks from the first album licensed by the Southbank Centre in London. I also find that eating healthily inspires tracks, so I'll write a track about green tea or cabbage - I try and pick up on everything!"



Kit list

Apple MacBook
Ableton Live 8
Genelec 8040A monitors
Focusrite Saffire Interface
Novation ReMOTE 25SL MK2

Strings attached

James recently played a couple of comeback performances in Wales and London, along with a real string section, which turned out to be a great combination...

"It was really nice to be back," he says. "It was full, so it's nice that people had remembered me after three years away with no releases. I usually use Ableton Live and play parts on top with a Novation ReMOTE 25 SL. But the real reason I wanted to get my setup down to a laptop and Live is that I often play live with a string ensemble, so there's no more dragging massive blocks of cases around and things like that.

"We do extended versions of the tracks, as it tends to flow better live," James continues. "I write the arrangements with one of the string players who I met at college. The performances can involve anything from a string quartet to having nine players up there. I don't think just standing with a laptop cuts it any more, so it's great to have the inclusion of real instruments in there."

One application to another

James' first foray into computer music was by way of MOTU's Digital Performer. It's not the most widely used package in the UK, but it was what he ended up using at college.

"I always associated Digital Performer with academia," James explains, "because when I did my compositional course at the Royal Welsh College of Music & Drama, that's what we were encouraged to use. So I only carried on with that, because I knew what it was, and obviously you tend to stick with what you know."

In fact, he stuck with it right through until his latest album, *Theme 2*. However, during the recording process, temptation came his way...

"For the album, I did everything on a G4 Mac running Digital Performer 5 - it's lasted me quite a few years," James says. "I used many plug-ins included with DP, and I got some free ones online. I also used a Yamaha CS1x for the sounds, as well as a Novation Supernova, both of which are about ten years old now. But then I noticed everyone else was using either Logic or Cubase - a lot of my friends started buying Nuendo as well. Then a friend of mine downloaded a demo of Ableton Live and that was it. I think every ten or 15 years, you get a development in music technology that just wipes the floor with everything else. I thought Live was just incredible. You can start with a blank canvas, and after ten minutes, you tend to have quite a few ideas going."

James made the switch to Live, and with it came a complete studio rethink...

"We were moving and now I'm in a flat that has no room," explains James, "so I got rid of all the hardware and now I'm just doing everything on a laptop with Ableton Live 8. I think it's the most intuitive piece of software. I've realised that you really can do it in one box now and I don't have to buy any plug-ins. It's kind of funny, as my setup reached a peak and shrunk back down, and now it's just a laptop. I went through a G4 and an iMac - now it's a MacBook with Genelec 8040A monitors.

"On the new album, I bought Ableton Live half way through," he continues. "I'm quite into taking something you've done and playing with it, rather than totally doing something from scratch. So I'd play a tune on DP using the ancient keyboards, then bring that over to Live and use the effects there. On a basic level, that might be just reversing it, but I also really like the reverb and delay. So I might get something new going on in Live, then import it back into DP, which would give the track a whole new lift. It's quite a long-winded way of doing it, but I get some quite interesting results that way."

James admits that the particular working method he's describing was only born out of the transition from Digital Performer to Live. Now it's just the one application all the way.

"I've pretty much stopped using DP now," he confirms. "I've just found that, with Live, you can

Give up the day job?

As his day job, James works for the Performing Rights Society, so as well as being able to make sure he gets his own rights paid for, he also has a unique insider view of the current financial crisis facing musicians...

"I think it might be pretty grim for them," he says. "I know that on Google, for example, the most commonly used search term connected with me is 'Culprit 1 torrent'. If as many people bought the album as downloaded it, I could do it full time. It's sad when you hear about that. MySpace fulfils the role of testing the music out, so you'd think that if people hear it there, they might buy it and not steal it. There is light at the end of the tunnel - UK Music are doing a great job - but it's a shame that film and music are seen as commodities you can just steal. It is hurting what is one of the most successful industries the UK has. The most worrying thing is that there's a generation ten years below me that has never bought music. But you never know, it may turn round - stranger things have happened!"

scroll through the whole track so much easier - it's just very easy-to-use. In fact, I think it's really revolutionised the sequencer market. Now I'm just using it with its bundled plug-in suite and that's about it. I'm determined to use just one piece of software and to learn it thoroughly. If I'm honest, I'm only a quarter of the way through the Ableton Live manual, which I'm trying to read. I think they deserve credit for actually writing a usable manual, because so many of the others I have used in the past have been poorly translated, especially the Korg ones - inspiring in places, but hilarious in others! But with the Ableton one, it's spot on.

"I'm really keen to do the next album on the MacBook, just using Live and its sampler," James continues. "I think that having it all on a laptop is amazing. You save space and it's easy to carry around. It is the most liberating thing to have happened to musicians for years. You can just throw everything in a gig bag now, go anywhere in the world and not get whacked for extra carriage. When I played the South By Southwest festival in the United States with the old setup, there was a horrible shocker at the airport, costing another £400 for the equipment, so at least that won't happen again with the laptop! I for one don't have any gear lust, and I've no need for hardware any more. I think Live can go so deep that I really don't need anything else."

But it's not quite all Live just yet...

"I still use the samples from your cover discs,"

James reveals. "I'm using some Harmonium ones at the moment as multisamples. There are loads of *Computer Music* and *Future Music* samples on the album, so you know that they are used and appreciated! I think they're great!"

One-track mind

James has mixed views on the proliferation of music and the ease with which it can be made these days. Despite having pared his setup right back to the bone, he still believes that you need an insatiable passion to make *good* tunes.

"In previous years, you had to be quite passionate to build a decent setup," he says. "I remember reading about Liam Howlett begging his dad to buy him a keyboard, and I was similar. But now you can download a crap sequencer off the net and get something going on in five minutes - and in the next five minutes, you can start a MySpace page. There are so many people doing it now - so many people able to make music - that there's this extra filter of crap that you have to go through. On the

"I remember reading about Liam Howlett begging his dad to buy him a keyboard"

other hand, though, it may have created a new Liam Howlett or Four Tet along the line, so it's all very interesting."

So how does a typical Culprit 1 track come together, **cm** samples aside?

"I don't usually start with the drums like a lot of computer composers do," James replies. "Because of my training, I tend to write at the piano, then start recording if I get a good idea. I also use the keyboard and maybe come up with an idea using a simple preset, but then mess around with that sound in Live. I think it's most important to get the idea down, then change the sound afterwards. I think a trap that a lot of people fall into is producing as they go along, which can really eat up your time. While that method might work for a lot of people, I think it's best to get the tune down first, then produce and mix later."

And how is the new album sounding?

"It's got a strong theme running through it," says James. "I put a lot of emotional effort into it. It also has three vocalists. There's Smiler - a rapper, who's quite popular on 1Extra, MTV Base and that kind of thing. There's also Iko from Devon, who has a really unusual voice, and a poet called Polar Bear, who plays around London a lot and tends to do stuff on BBC Radio 4. So there's a whole spectrum of people. The album's taken a lot of time to do and I'm really looking forward to everyone hearing it."

Culprit 1's album, *Theme 2*, is out in May on Exceptional Records. **cm**

CLICKPRODUCE

SAMPLES, LOOPS, INSTRUMENTS & EFFECTS

Good to see a website that works similarly to most music download sites. The best thing about Clickproduce is when I'm stuck in the studio I can spend time hunting for an 'inspirational' sample to kick things into gear.

Oliver Lang

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COMPUTER music > competition

Polish DSP geniuses D16 Group have been pumping out premium quality plug-ins since 2006 and now they're giving you the chance to win all of them in the form of a **Total Bundle** (€449) - there two packs to be won. For squealing 303 acid lines, the **Phoscyon** synth is the business. And for beats, turn to **Drumazon** (cm112, 9/10), **Nepheton** (cm116, 8/10) and **Nithonat** (cm143, 9/10), which accurately mimic Roland TR-909, TR-808 and TR-606 drum machines. D16's SilverLine effects are firm favourites here at **cm**. We described **Devastor**'s (cm126, 9/10) multiband distortion as "devilishly divine", while **Decimort**'s (cm133, 8/10) bitcrushing surprised us with its emulation of old-school sampling circuitry. If lush, slick sounds are your bag, turn to the **Toraverb** (cm146, 10/10) reverb and **Syntorus** chorus (see p100). Finally, there's **Redaptor** (cm138, 7/10), a tube preamp plug-in and **Fazortan** (cm131, 7/10), a lush 70s-style phaser.

HOW TO ENTER

To enter, send a text to **87474** containing: the keyword **D16**, followed by a space, then **A**, **B** or **C**, then another space, then **your email address**. Or you can use the online form at **www.futurecompetitions.com/cm151** to enter the competition. Entries must be received between **April 12 2010** and **May 11 2010**, and only UK residents aged 18+ may enter.

The question

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From the makers of **COMPUTER music**

cm/reviews

The latest computer music gear tested and rated!



90_ IK MULTIMEDIA AMPLITUBE 3

We tune up, plug in and rock out with the new version of IK's classic guitar amp simulation software



92_ ACOUSTICA MIXCRAFT 5

Have Acoustica perfected their 'craft with the fifth version of this fuss-free DAW?



94_ AVID ELEVEN RACK

An amp sim and Pro Tools interface combined, this is one nice rack

This month

- 90_ IK Multimedia AmpliTube 3
- 92_ Acoustica Mixcraft 5
- 94_ Avid Eleven Rack
- 97_ Softube Trident A-Range EQ
- 98_ Image-Line Harmless
- 100_ D16 Group Syntorus
- 104_ Arturia Brass 2
- 105_ Best Service Titan
- 106_ Mini Reviews
- 110_ **cm** Recommends

Our promise

We bring you honest, unbiased appraisals of the latest computer music products. Our experts apply the same stringent testing methods to all gear, no matter how much hype or expectation surrounds it.

What the ratings mean

- 1-4_ A seriously flawed product that should be avoided
- 5_ This product's problems outweigh its merits
- 6_ A decent product that's only held back by a few flaws
- 7_ Solid. Well worth considering
- 8_ Very good. A well-conceived and executed product.
- 9_ Excellent. First-rate and among the best you can buy
- 10_ Exceptional. It just doesn't get any better than this!



Awarded to products that challenge existing ideas and do something entirely new



A product has to really impress us with its functionality and features to win this one



If the product exceeds expectations for its price, it will receive this gong



In the opinion of our editor, the best product reviewed in the magazine this month



IK Multimedia AmpliTube 3

€318

PC

MAC



System requirements

PC P4/Athlon 64 CPU, 1GB RAM,
Windows XP/Vista/7, VST/RTAS host
or standalone

Mac Dual 1GHz G4/1.5GHz Intel CPU,
1GB RAM, OS X 10.4.4, AU/VST/RTAS host
or standalone

> The AmpliTube series of amp modelling software launched back in 2002 and became an immediate success due to its solid tone backed up by a wide array of amps, cabs and effects, decent routing and slick graphics. We've since seen v2 and various 'spin-offs', such as the Ampeg SVX bass amp, Jimi Hendrix, Metal and Fender packages, and the X-Gear 'shell'.

Remodelled

AmpliTube 3 builds on this success, combining an overhaul of existing features with the introduction of many new ones. On the technical side, modelling techniques first seen in last year's AmpliTube Fender (9/10, **cm140**) are present, these being IK's third-generation Dynamic Saturation Modelling and Volumetric Response Modelling (used for rotary speaker effects). All existing AmpliTube 2 models are present in v3, but they've been reworked to improve efficiency and dynamic response.

There are new models in v3 (amps, cabs, pedals and effects), including some from Metal and Jimi Hendrix, so you're now looking at over 160 modelled elements in total (check out the

manual on the DVD for detailed info).

The cabinet and miking section has received a substantial upgrade in terms of both choice and flexibility (see boxout), and both pedal and rack sections now thankfully include drag/drop and copy/paste functionality. Routing-wise, AT3 can now operate in full stereo mode, making it useful for general effects processing of non-guitar signals. Meanwhile, in standalone mode there's an expanded four-track recorder with track-independent timestretch, which serves as an excellent tool for learning parts.

The greatest functional improvements in AT3 have been drafted from X-Gear. You can assign custom automation and MIDI CCs (up to 16 of each) using the context-sensitive menus or MIDI/Auto pages, plus there's built-in support for IK's StompIO and StealthPedal (of course, the forthcoming StealthBoard will also be fully supported). AT3 can access the modules of all other AmpliTube products you own, too. They appear in categorised menus, effectively doing away with the need for X-Gear. It also prepares for the imminent arrival of model 'singles' (ie, amps, effects, etc, sold on an individual basis).

"Every flavour of fuzz and distortion can be found in the pedals"

Big numbers

One of Amplitube's big selling points has always been its variety of modules. New amps based on Orange, Mesa/Boogie and even bass designs, such as Trace Elliot and Gallien-Krueger, spread the net wider still, so you now have 31 amps in all. The pedals have also multiplied (now 51 in total), and to give you some idea of the breadth of selection, there are four types of wah wah, seven fuzz pedals and 11 distortions. New for the rack are the Step Filter, Step Slicer and Tap Delay.

There are now 46 cabinets to choose from – that's 30 more than Amplitube 2 – and these are categorised by style (guitar, bass, rotary) and size (6, 10, 12 and 15 inch). Finally, there are 15 mics, including three ribbon models.

There's a whole new set of presets to contend with, and a new preset browser page with various categories. Oddly, this didn't seem to incorporate patches from our other IK amps, which is a shame. Note that while AT3 replaces the models from AT2, you can still open your AT2 presets, although they may sound slightly different using the 'remastered' models.

Tone alone

Like its predecessor, AT3's strength lies in mimicking rock guitar amps, and if you like 'dual rectified', US-style rock sounds, you won't be disappointed as the Mesa/Boogie, Randall and Peavey amps really deliver. Similarly, UK classics (AC30 and Marshall) have a strong presence, and the addition of more bass amps is also welcome. Fender amps are well represented, but there's enough differentiation from Amplitube Fender for each to remain an attractive buy.

For huge stereo rock guitars, the flexibility of the routing comes into its own (you can use two complete setups at once, and there are eight routing options), and we also had great success using the new amp miking system to combine spread mics with a touch of room sound.

Pretty much every flavour of fuzz and distortion can be found in the pedals, while sweet swooshes and warm wobbles can be had with the Electro-Harmonix style Small Phazer and Electric Flanger, as well as the Uni-V, which is, of course, a Uni-Vibe imitation. Advocates of the crazy Digitech Whammy pedal will also be thrilled to set foot on the wild Wharmonator.

With such a bewildering selection of



Step on it! As expected, there's a great selection of stompboxes, and you can now drag and drop them, too



There are plenty of miking options in AT3, including movable close mics and a stereo room mic

'Phone party

Amplitube 3 has a much-improved cabinet and miking section. In addition to the many cab types, you now get two flexible close mics and a stereo room mic option. There are 15 close mics, which can be positioned anywhere in the left to right or near to far planes (though you can't change their angle). You move them by grabbing them or using the positioning graphic to the right. Pan, solo, mute and phase invert can also be selected individually and there's a mic blend slider, too.

The stereo room mic is simpler and

includes mute, solo and phase flip, plus width control, pan and level. Once again, you can adjust it using the controls or the graphic. You'll also find a selection of five room types: amp closet, small studio, mid studio, large studio and hall. Rounding things off is the cabinet size control. This enables you to artificially inflate or contract the size of the cabinet (75% to 125%).

Overall, the new cabinet implementation is wonderful, and the only shame is that you can't import your own impulse responses into it.

modules, you'll be glad of the presets, and although some rely too heavily on the rack effects, such all-encompassing sounds can be pretty seductive and inspiring when jamming by yourself, making a good starting point.

Sonically, IK have upped their game with AT3, as it's very much on a par with the outstanding Amplitube Fender, yet offers a wider range of tones. The only downside is that complex patches can put the pressure on your CPU. However, you can reduce the quality of individual sections in the Prefs menu (as in previous versions), or use the new Eco, Mid and Hi front panel options to ease CPU load – these act much like Prefs combination presets.

In recent times, an influx of upstart quality amp plug-ins has begun to chip away at the established names, but we reckon none of them offer quite the flexibility and choice of Amplitube 3. Disputes will no doubt forever rage over which amp sim package sounds 'best', but you've got to hand it to IK for continuing to turn it up to 11. **cm**

Contact IK Multimedia, 0800 0934066
Web www.ikmultimedia.com
Info Upgrade, €177;
Stealth Pedal bundle, €353

Alternatively

Native Instruments Guitar Rig 4
cm147 >> 8/10 >> £179

Now includes the excellent Control Room for mic balancing

Overloud TH1
cm146 >> 9/10 >> £245

One of the most impressive amp sims, with many pedals and effects

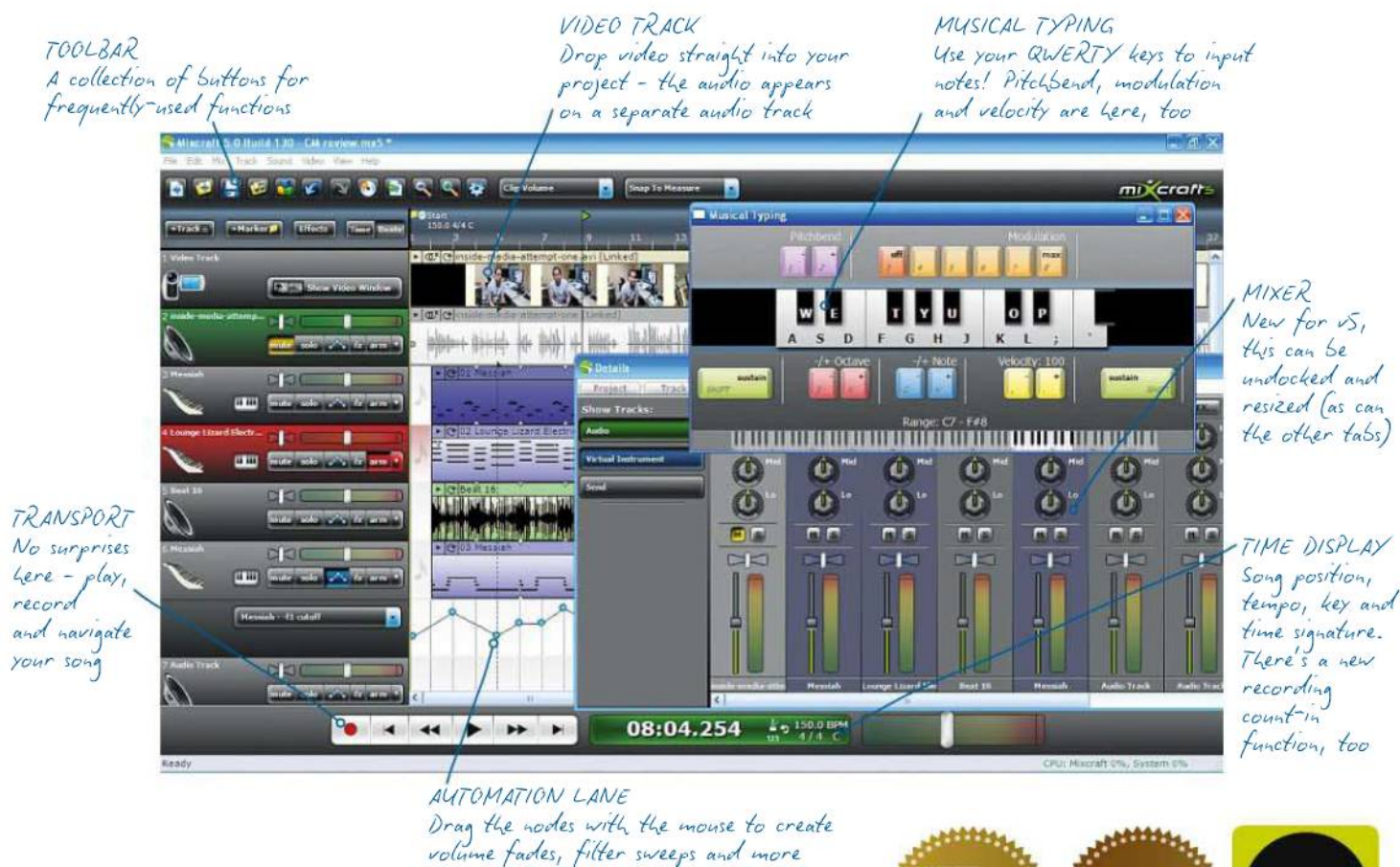
Verdict

For Loads of amps and pedals
Great sound quality
Excellent new cabinet miking system
Integrates all Amplitube products
Doubles as a neat multi-effects plug-in

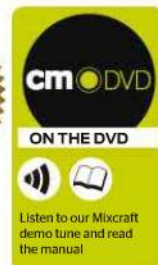
Against Choice can be overwhelming
Fully loaded racks can be CPU-intensive

A great update that sees Amplitube 3 hanging in there as one of the premier amp sims for tone, flexibility and choice

9/10



Acoustica Mixcraft 5 £69



It's been taking steps towards full DAW status for some time now, and it looks like Mixcraft could be about to truly blossom...

System requirements

PC 1GHz CPU, 2GB RAM, Windows XP/Vista/7

> We first encountered Mixcraft in 2005 (**cm**85, 6/10), when it was a gangly teenager of an audio sequencing package that didn't even have basic features like snap. By the time we caught up with it at version 4 in 2008 (**cm**125, 8/10), it seemed much more self-assured, delivering MIDI and virtual instrument support and generally starting to feel like a proper DAW. Now we have Mixcraft 5, which, when you take a look at the new features list, looks set to be the release at which the software fully matures.

'Face value

We won't waste too much time dealing with the interface: it's a straight-down-the-line affair and you can probably tell what everything is and does just by looking at the screenshot. It's worth noting, though, that the Details tab at the bottom - which gives you access to Mixcraft's editing windows and loop library - can now be undocked. As a result, full-screen MIDI editing is now possible, which is a real boon. You can even drag the whole tab onto a second monitor.

Speaking of the MIDI editor, there's a newly added option to switch to a basic notation view,

in which notes can be added and moved around. One clever touch is that piano roll-style bars appear behind each note, representing their length. You can then drag the edges of the bar itself to easily adjust the start position or length, which is a lot easier than fumbling with the usual crotchet/quaver/minim tools, especially for those not fully au fait with notation.

For those musically inspired moments when you don't have access to a MIDI keyboard, the Musical Typing Keyboard will come in handy. It does exactly what it says, turning your computer's QWERTY keys into musical ones.

There's also a new Mixer option to consider in the Details tab - rather than using buttons and sliders below each track name, you can now mix on a virtual mixing console. Each channel offers standard mixer functionality, and includes a useful three-band EQ.

Also in the mixer are the new Master and Send tracks. The former facilitates global effects and volume adjustments, while the latter are auxiliary busses that enable you to share effects between multiple tracks (such as reverb - the classic send effect).

"It's a pleasure to find AAS's ever playable Lounge Lizard Session in Mixcraft 5's revised line-up"

Further evidence that Acoustica are attempting to turn Mixcraft into a more serious music production tool is provided by the new automation features. Each track now has an automation lane that enables you to adjust effect and instrument parameters over time by clicking and dragging.

It's all in the details

Smaller details also serve to improve the user experience. Clips can now be linked, making it easy to move or copy specific sections of a track, and the entire contents of a track (the audio, MIDI, effects and automation) can be bounced to a new audio track, should you need to free up some CPU cycles. Speaking of which, you can now monitor CPU usage with a dedicated meter, though with support for multi-processor machines and SSE2 optimisations, you're less likely to run out of horsepower than before.

Returning to the visible additions, there's now a video track - AVI and WMV files are supported as standard, and others may be importable depending on the DirectX decoders you have installed. Editing options are pretty limited - you can move clips around, adjust their start and end points and split them - but it's fine for adding a soundtrack to a home movie (a video's original audio can be unlinked and deleted) and overlapping two videos creates an automatic crossfade.

No DAW update would be complete without a selection of new plug-ins, and it's a pleasure to find AAS's ever playable Lounge Lizard Session in Mixcraft 5's revised line-up of instruments. You can add to this Gunnar Ekoranas' Messiah, a more than serviceable Prophet 5 clone, and the Alien303 Bass Synthesizer, a 'bassline' synth that's more versatile than its name might have you believe. The effects roster has been bolstered by the vintage-style Pultronic Tube EQ (in case you can't tell, it's a Pultec emulation) and Shred Amp Simulator, the latter of which boasts five amp heads, 17 cabs and six effects.

The DAW with more

You can peruse the full list of updates in the (slightly hard to navigate) Mixcraft 5 PDF



Mixcraft's new Notation View Editor is simple yet effective, which is just how we like it



Mixcraft's range of plug-ins come from a range of third-party developers and is pretty diverse

Mixcraft vs GarageBand... fight!

It's impossible to use Mixcraft 5 without being reminded of Apple's GarageBand. Although comparisons between the two programs are somewhat meaningless - they are, respectively, PC- and Mac-only - it's interesting to consider their key differences.

Mixcraft 5 has taken a lead over GarageBand with the addition of a dedicated mixer and Send tracks. It's also worth noting that, while GarageBand only offers a selection of built-in Apple instruments and effects, Mixcraft's suite of third party plug-ins gives more variety. Its dockable Details tab also makes editing a little easier.

GarageBand fans could counter that

their software supports Artist Lessons - video tutorials featuring famous musicians. However, their true worth is always going to be limited by your interest in the artist. On a more practical level, GarageBand has a useful multi-take recording feature, and feels a bit slicker overall.

Arguably the key difference, though, is that GarageBand users who outgrow their application can move on to the pro-level Logic Express or Studio DAWs, taking their skills (and project files) with them. That said, if Acoustica keeps improving Mixcraft at the current rate, its users may not feel like they need to go anywhere else.

manual on the **cm** DVD, and also check out a tune we created in the software. We have to admit to being surprised at just how much Acoustica have added to Mixcraft 5, and they've clearly spent plenty of time testing and ironing out bugs (previous versions exhibited annoying glitches when looping - a problem that has been resolved, thankfully).

It seems that no element of the program has been left untouched, which is particularly impressive when you consider that this isn't a DAW that has a massive development team behind it. What's more, the vast majority of the new features are extremely useful: you get the feeling that Acoustica really believe in Mixcraft, and want to push it as their flagship app for the foreseeable future.

Most importantly, features haven't been needlessly added at the expense of usability - Mixcraft remains an accessible, affordable and stable application that enables you to make music quickly. Cockos's Reaper may be more capable, but if you're a PC user who wants to make things as easy as possible, Mixcraft is definitely the way to go. **cm**

Contact Et Cetera, 01706 285650
Web www.acoustica.com

Alternatively

Cockos Incorporated Reaper
cm144 >> 9/10 >> \$60

Similarly affordable, this lean, mean DAW is more 'techy' than Mixcraft

Steinberg Sequel 2
cm131 >> 7/10 >> €99

Accessible, but no plug-in support and hasn't been updated for a while

Verdict

For Extremely easy to use
Automation and send tracks
Useful new plug-ins
Nicely implemented notation editor
Attention to detail throughout

Against Video options are limited
Not the most advanced app
No 'big brother' application

A lot of solid and sensible tweaks have made Mixcraft one to seriously consider, and it represents great value for money

9/10



Avid Eleven Rack £759



Take an audio interface with Pro Tools LE support, give it a guitar input, fill it with virtual amps and effects, and here's what you get...

System requirements

PC 1GB RAM, Windows XP/Vista, USB 2.0 port

Mac G5/Intel CPU, 1GB RAM, OS X 10.5.5, USB 2.0 port

> Let's get this clear from the off: Eleven Rack is not simply the amps and cabs from the Eleven plug-in stuffed into a rack-mounted unit. It does cover that, yes, along with a multitude of stompbox effects, but it's also a fully-fledged audio/MIDI interface with mic preamp that fully integrates with Pro Tools LE, which comes bundled with it. Is this the perfect solution for recording and performing guitarists?

The business

Eleven Rack looks and feels the business. It's sturdy and heavy, with beefy switches and solid buttons and knobs, making it every bit the professional unit. On the front, there's the guitar input, mic pre (with gain knob and switches for phantom power and pad), headphones out, and a mono output to run to an amp.

Round the back, there's a second mono amp out, thus completing a stereo pair, and the signal feed for each can be DI, post-effects, post-amp or post-cab. A stereo FX loop, a main stereo out to hook up to your studio monitors, MIDI in/out, a footswitch/pedal socket, a pair of line ins, and digital I/O on AES and S/PDIF. There's USB, too, and an IEC 'kettle cable' socket (unsurprisingly, Eleven Rack isn't USB-powered).

For the impatient, all you really need to know is that you can plug your guitar into the front, hook up the outs and start playing. You can scroll through the amp rigs either via the front panel or with a foot switch, making it perfect for the stage. What immediately grabs you is the urgency and response of the sound - there's an

unrestrained wildness about it that really does make it feel like you're plugged into an amp. This could well be due to the True-Z guitar input, which places an impedance load on your pickups to match that of the simulated signal chain. Whatever, Eleven Rack feels *right*.

With Pro Tools LE installed and a USB2.0 cable attached, an Eleven Rack edit window appears on-screen when Pro Tools is launched. This is by far the easiest way of editing and, of course, any changes can be saved and recalled, too. It's not a plug-in, though - it's a piece of hardware, and as such, you can only ever have one 'instance' to play with at a time. The Eleven Rack appears as your I/O device and seamlessly integrates with the software, running at up to 96kHz. It can also be used with other DAWs as a CoreAudio, ASIO or WDM device.

Slippery when wet

When recording, both wet and dry signals can be captured simultaneously: the amped/effected signal appears in your DAW as a stereo signal, while a mono track captures the dry DI signal, which is vital for re-amping back through the hardware when it comes to mixdown and you realise the original tone isn't quite right.

Paradoxically, Eleven Rack's integration with Pro Tools LE is better than with the high-end Pro ToolsHD. Although the edit window is available in HD setups (and M-Powered ones, too, come to mention it), the USB audio streaming isn't, so the guitar's audio has to be recorded via digital (AES or S/PDIF) with analogue outputs hooked up to



"As a hardware solution for a recording/gigging guitarist, this could be the best thing going"

your usual Pro Tools interface. It's best to send the DI signal digitally (to avoid any further analogue noise being introduced) and use the analogue connection for the processed signal. Either way, it's a shame to be denied the very slick integration of LE, but the word is that the TDM architecture won't allow it.

On all systems, your current rig setup can be stored along with the recorded audio files, so that if you need to overdub or replace parts with the same sound, it can be recalled directly from a menu within the audio section. Parameters can be MIDI-controlled and automated, either with a controller or via on-screen adjustments.

The real thing

Now let's get back to the important bit: the tone. With any amp modeller, it's very easy to say that it's not quite like a real amp. Of course it's not: amp modellers aren't back-breakingly bulky, you can run them below deafening levels without affecting the tone, and you get more than one 'flavour'. More seriously, Eleven Rack comes very close in terms of touch and response, and with it is a broad range of tones.

Two of our criticisms of the original Eleven plug-in (8/10, **cm**125) were that it often favoured fizz over real bite, and that it had a generic

'American' tone across all amp models. The Rack version has an immediacy and edge to all models and a very clear distinction between amps, making it much more versatile. We contacted Avid to make sure we weren't hearing things and they confirmed that the DSP programming has indeed been reworked for the Rack, for greater authenticity.

The amp range is the same as the plug-in, though, and includes models of all the usual suspects: Vox, Fender, Marshall, Soldano and Mesa/Boogie, plus a Digidesign custom amp that stands up to the established names. With all these at your disposal, you're spoilt for tone, no matter whether you favour lead or rhythm, clean or distorted, and so on. Cabs can be mixed and matched, too, as can the mics. New for Eleven Rack is an impressive array of effects pedals (see boxout).

Eleven Rack is a real beast, and the results are greater than the sum of its parts. As a hardware solution for a recording/gigging guitarist, this could be the best thing going, and by some way. The feel and response is very realistic and the range of tones is pure luxury. **cm**

Contact Avid, 01753 655 999
Web www.avid.com



The stomp effects are currently exclusive to Eleven Rack, and Avid reckon it'll probably stay that way

Pedal to the metal

Not only does Eleven Rack sound better than the plug-in, but it has a pedalboard where you can place up to seven effects in whatever order you want (in series only, though). Add to that a volume pedal and an FX loop for wiring your own real pedals into the circuit and you see how guitarist-friendly this unit is. For each of the five effects categories, there are a few pedals to pick from. There are three distortion units modelled on classic 70s and 80s stompboxes, and they bear a remarkable resemblance to the Electro-Harmonix Big Muff, Pro-Co Rat and a particular Boss pedal. Similarly,

we almost mistook the two wahs for Morley and Dunlop designs, and the two delays - one digital, one tape - are similar to Boss and Echoplex units.

There's a great spring reverb for that authentic 60s 'sproing', plus a posh digital one. The modulation effects - chorus, flanger, phaser and rotary - are impolite and mean business, as they should. Overall, the pedal board has the raw impact of the real thing without the drawback of lugging a heavy box around and the frustration of plugging in your axe only to find that batteries are flat, power supplies are acting up or your cables are hooked up wrong.

Alternatively

Line 6 TonePort UX8

N/A >> N/A >> £528

Eight-channel USB interface with Pod Farm modelling software

Roland VG-99 V-Guitar System

N/A >> N/A >> £991

Amp/guitar modeller that connects via USB. No mic preamps, though

Verdict

For Feels and sounds like a real rig

Vast range of amps, cabs and effects

Transparent as a Pro Tools LE front-end

Road-worthy build

Against Only one mic preamp

Not so well integrated with Pro ToolsHD

You'll have to get used to re-amping!

One of the best products we've seen from the Avid stable in years, Eleven Rack is perfectly pitched at recording guitarists

9/10

GLADIATOR 2

A revolution in synthesis!

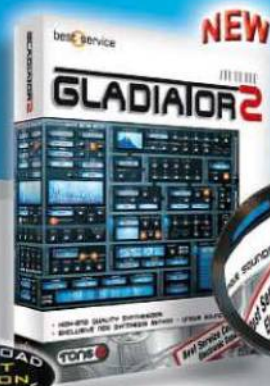


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Woodwinds I

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Brass I

Trumpet, Viennese horn, Trombone (each solo & ensemble), Tuba £ 425



Chamber Strings I

Violin ensemble (6 players), Viola ensemble (4 players), Cello ensemble (3 players), Double bass ensemble (2 players) £ 425



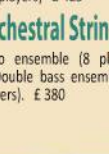
Appassionata Strings I

Violin ens. (20 players), Viola ens. (14 players), Cello ens. (12 players), Double bass ens. (10 players) £ 425



Solo Strings I

Violin, Viola, Cello, Double bass £ 295



Orchestral Strings II

Cello ensemble (8 players) & Double bass ensemble (6 players) £ 380



Woodwinds II

Piccolo, Flute 2, Alto flute, Viennese oboe, English horn 1 & 2, Small clarinet Eb, Bass clarinet, Contrabassoon. £ 365



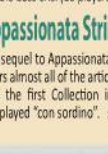
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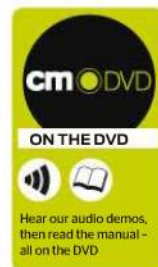
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Softube PC MAC Trident A-Range EQ £135



You could be forgiven for doing a double take, but here's another virtual version of Trident's A-Range channel strip

> It was only two issues ago, in **cm149**, that we reviewed Universal Audio's recreation of the EQ section of a Trident A-Range console channel. Now there's another option for those seeking that particular EQ, courtesy of Softube.

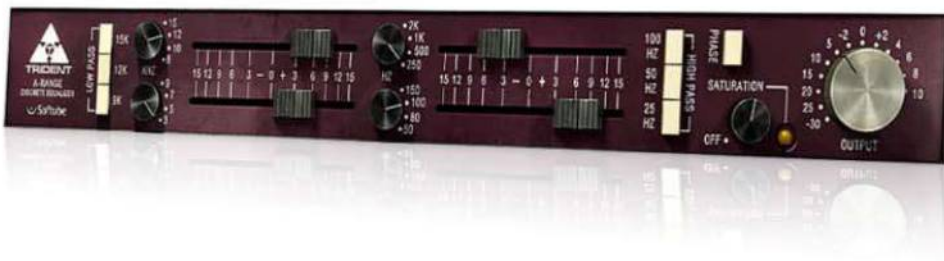
The original desk featured a powerful inductor-based EQ design associated with the 'British' production sound of the time (think David Bowie and Marc Bolan). It also had distinctive fader-style gain controls, four frequency options per band and 'additive' high- and low-pass filters. Naturally, all these features have made it into the Softube version and although slightly different graphically from UAD's, the layout follows roughly the same pattern. In fact, the only obvious functional difference is Softube's inclusion of a saturation control.

The four-band EQ includes high and low shelving bands and two bell-shaped mid bands. There's a selection of four fixed frequencies per band and +/-15dB gain. The frequencies are fairly evenly spaced across all bands, but with emphasis in some key areas, so you get 50, 80 and 100Hz options for the low shelf, and 1, 2 and 3kHz options in the midrange. There's also some overlap between the high shelf (8kHz) and the high mid-range band (9kHz).

As mentioned, the high- and low-pass filters are 'additive', meaning that you can engage more than one to get different (and more extreme) behaviour. The other significant thing to note is that the EQ bands interact with each other. For example, even just selecting a different low mid-range frequency will affect the behaviour of the high mid-range band.

Saturation station

Trident's original desk design did not include a saturation control. However, it did overload in a distinctive way when driven hard, and Softube have chosen to mimic this with their saturation feature. We found this very easy to use, as it's a



gain-compensated control (so no need to tweak input and output gains as you would on the desk itself). Its sound varied considerably depending on how hard we pushed it, and at subtle levels proved excellent at adding bite to snare hits and picked electric bass. At higher levels, it really began to compress the overall level and to sap the bottom end in exchange for top-end fizz. However, we found that, for creative effects, combining this with some heavy EQ worked pretty well.

The EQ itself is a powerful design, and pushing it hard achieves great results. We did, at first, find ourselves wondering why we were adding 15dB of 8kHz shelving boost to our bass guitar, but as ever with vintage designs, it's best to ignore the numbers and use your ears.

Up against modern, digital parametric EQs, the obvious limitation here is the fixed frequency design. While this makes the EQ less flexible, we found that combining the low cut filters with an EQ boost still offered plenty of capabilities for shaping, say, a bass drum or the low mids in an acoustic guitar.

Softube have done an excellent job here, and their emulation sounds the part while being easy on the CPU. The EQ itself is of the same caliber as UA's, but the inclusion of a saturation control adds a desirable extra dimension. **cm**

Contact Adam UK, +44 1992 525 670
Web www.softube.com
Info TDM version, £277

System requirements

PC PIII CPU, 512MB RAM, Windows XP/Vista/7, VST/RTAS host, iLok

Mac G4/G5/Intel CPU, 512MB RAM, OS X 10.4, VST/AU/RTAS host, iLok

Alternatively

UA Trident A Range EQ
cm150 >> 8/10 >> \$249

Sounds great but has no saturation control and is for UAD users only

PSP Audiware sQuad
cm138 >> 9/10 >> \$297

A suite of five native EQs, some based on vintage designs

Verdict

For Powerful Trident EQ

'Bonus' saturation feature
 Interesting interplay between bands
 Additive high-/low-pass filters
 CPU-efficient

Against Fixed frequencies are limiting

Yet more great virtual analogue hardware from Softube, this is emulation done right

9/10

The same but different

It's unusual to find an officially-endorsed plug-in emulation of exactly the same hardware coming from two different software designers. Obviously, the UA plug-in is DSP-powered (it requires a UAD card to work), while the Softube is native (and has an additional saturation control). They're also modelled on two different physical desks, but these issues aside, you'd expect them to be pretty close. So are they? First up, frequency behaviour. This

seems quite similar - however, our testing did reveal a slightly different gain scaling, with the Softube needing roughly 0.5dB less to achieve the same boost on each band. The Softube one has a slightly different gain range for the output control, too. Possibly the most interesting comparison was with completely flat settings, as inserting the Softube version resulted in a subtle cut in very high frequencies up towards 20kHz.

TIMBRE
Select from a variety of waves and add and subtract harmonics

FILTER
Works much like a typical filter, though it has some less standard filter shapes

PITCH
Set overall pitch and tinker with harmonic detuning and Grit

GLIDE
Features velocity-controlled portamento and legato

PHASER
Manipulates harmonics to create a wide variety of tonal effects

EFFECTS
Chorus, delay and reverb, along with a compressor

UNISON
Voices can be stacked here to produce thicker, wider sounds

LFO
A simple low frequency oscillator that can modulate many parameters

HARMONIZER
Creates harmonised intervals: octaves, fifths and so on



Image-Line Harmless \$79



System requirements

PC SSE1-compatible 2GHz AMD/Intel
CPU, 512MB RAM, Windows XP/Vista/7,
VST host or FL Studio

> Image-Line's roster of soft synths expands once again with Harmless, which is described as a 'subtractive-additive synth'. Put simply, it looks and acts much like a subtractive synth, but is in fact additive under the hood.

The result is a synth that can produce sounds that simply wouldn't be possible using subtractive synthesis alone. For example, tone generation, filtering and phasing are all performed by manipulating the raw harmonics. This provides some unusual filter shapes, amongst other things.

While there are more flexible additive synths on the market currently (such as Camel Audio's Cameleon 5000), Harmless' strength comes from the fact that it does a great job of opening up the world of additive synthesis to the more casual sound programmer by keeping the interface simple and intuitive.

Shiver me timbres!

Sound generation begins in the Timbre section, where you can select from a range of waveforms, or import and resynthesise single-cycle waves from audio files. If you're

using Harmless with FL Studio, you can simply drag and drop sounds straight onto the Harmless GUI to be analysed. Most of the built-in waveforms are sawtooth variants - this makes sense, because a pure saw wave theoretically contains all harmonics, both even and odd. Thus, you can create many other wave shapes by removing harmonics.

There are a number of options for shaping the sound, all of which are fairly novel. There's a harmonic equaliser, the bands of which follow the pitch being played, so that the first slider's band is always centred on the first harmonic and so on. There's also a sub-harmonic generator, for adding weight to sounds, and a Harmonic Mask section, which enables you to reshape sounds by subduing harmonics, or subtracting them entirely.

A Pluck feature adds a fast-acting low-pass filter envelope to the timbre. This can be assigned so that either the Harmonic Mask or Harmonic EQ dictates the decay rates of their particular harmonics.

The filter section works like that of a standard subtractive synth, but offers considerable

"Few synths have such an 'undisguised', raw sound, and this is what makes Harmless standout"

flexibility in terms of filter shapes. What's more, the cutoff frequency can be set to a Hz or Octave scale, and the Resonance section features a wide range of different shapes, including an unusual Noise shape, which randomly selects harmonics to emphasise.

Phased out

The Phaser is one of the most interesting aspects of the synth, offering traditional phasing, simulated PWM and even modulation of the harmonics' frequencies - see the boxout for further info and more on Harmless' effects.

Surprisingly for such an uncluttered synth, there are many more aspects of Harmless' sound design architecture than we can possibly squeeze into this review (see the manual on the disc if you're a specs fiend), and it's a testament to the designers that, in spite of this, Harmless never feels like a chore to program.

The presets are fairly standard and not especially inspiring, covering the usual basses, atmospheres and leads, along with some useful tutorial patches. As far as sound quality goes, this synth is unashamedly digital. There are no attempts to disguise the sound with analogue emulation effects or vintage-modelled oscillators. Having said this, though, we reckon it sounds clean and clear, not harsh or cold.

The synth really comes alive when you start experimenting with some of its more esoteric controls. Tweaking the Phaser and Harmonizer soon becomes second nature, and enables simple sounds to be reshaped into complex, evolving textures - it's particularly good for early-90s style dance leads.

Although the synth has a surprisingly deep and warm low end, the overall tone of standard basses and leads is still usually very clean, so it probably won't be what you're looking for to pin down the bottom end of your dubstep or DnB productions. Where this synth really shines is in its ability to create a virtually limitless range of distinctive and unadulterated mid-range lead and melodic sounds. Almost ironically, it's the fact that Harmless' sound is so 'undisguised' and raw that makes it stand out.



As well as selecting from the ready-made waveforms, you can import and resynthesise them from audio files



Harmless gives you six different reverb spaces in which to place your sounds

Harmonic excitement

The Phaser in Harmless is an integral part of the synthesis engine. Unlike a typical phaser effect, which uses phase cancellation to artificially create moving 'holes' in the frequency spectrum, Harmless instead creates such gaps by directly manipulating the harmonics that make up the sound.

Controls include Width, Offset and Speed, and there are a variety of phaser types available: Classic, Triangle and Eggs are classic models; Deep, Deeper, Condom, Twins, Cascade & Box are special effects that exploit Harmless' additive synthesis engine, and Freq is a special effect that modulates the frequency of targeted harmonics.

Harmless also has a range of standard effects. In keeping with the intuitive and ergonomic design, these are simple and neatly laid out, comprising a chorus, delay, reverb and compressor. Although fairly standard, the quality is good throughout, with each offering a variety of effects types, along with simple mix level/volume controls and, in the case of the delay, feedback and time parameters.

The compressor is derived from Image-Line's Maximus multiband compressor/limiter. Here, tones can be compressed, limited or even distorted - this is great for creating more aggressive sounds.

The synth also offers normal and high-quality modes, as well as optional multithreading for improved performance on multicore CPUs. In general, CPU usage is low, although it can climb steeply with some of the more full-on patches.

It should be noted that, while being capable of plenty of sounds that you'd never get out of a comparable subtractive synth, there are also many types of sounds that Harmless is simply not that well suited to. It would be unfair to dock points here, however, as the intention was clearly to step away from the well-trodden path, rather than give us yet another virtual analogue.

So good it hurts

While there are additive synths out there that offer greater depth of programming, it can be difficult to scratch the surface with them, and working with them can often feel more like a scientific endeavour. Harmless is a refreshing exception: it's invitingly tweakable, and it should appeal to sound designers and musicians looking for something a little different with the ease and functionality of a classic subtractive synth. The price is also rather attractive. **cm**

Contact via website
Web www.image-line.com

Alternatively

u-he Zebra 2

cm108 >> 10/10 >> \$199

Wireless modular featuring subtractive and additive synthesis

Camel Audio Cameleon 5000

cm69 >> 8/10 >> £79

Sophisticated additive synth engine with patch morphing

Verdict

For Fun and easy to program
Huge range of sonic possibilities
Warm low end

Against Not the dirtiest sound around
High CPU use with complex patches
There are more flexible additive synths

At last, a quality additive synth that doesn't require a PhD in Synthesis to program!

8/10

D16 Group Syntorus €35

PC MAC

Yet another slick-looking SilverLine plug-in from those perfectionist Poles, this time a chorus

> Chorus effects have been around for decades, in the shape of analogue guitar pedals (from Boss, Electro-Harmonix et al), digital rack units (think TC and Eventide) and even built into vintage analogue synths (see Roland's Juno series and string synths like the ARP Solina). Many have achieved cult status, but it's fair to say that truly great chorus plug-ins are a rarity. D16 Group's latest SilverLine effect, Syntorus, however, is one of them. If you're not sure what chorus is, see *Busting Jargon* on p13.

Syntorus is a dual path/voice design, with a bank of identical controls per path. Offset sets the minimum delay amount, while Depth is the modulation amount, with movement governed by the LFO - see the boxout for details. The remaining path controls are a volume knob and Tremolo, which causes the amplitude to pulse in time with the LFO - a very cool feature.

The knobs on the far right control the dry/wet mix, high-pass filter frequency (applied to the wet signal only), and output level. Finally, there's the BBD Emulation option, which simulates an analogue bucket-brigade delay line.

Chorus of approval

When using only one path and with the BBD option off, Syntorus is similar to any other quality single-voice chorus plug-in. However, it really comes into its own when you bring in both voices, bringing to mind the lush, foolproof chorusing that we took for granted back in the hardware days, and giving anything from gentle 'watery' effects on through to rapid wobbles.

It quickly becomes apparent that Syntorus' flexibility gives it the edge over common chorus plug-ins, and the presets demonstrate its range, featuring everything from imitations of 'famous' chorus tones to special effects (eg, using the tremolo on both paths as a rhythmic gate). As with other SilverLine plug-ins, there's a preset manager and MIDI learn.

We tried Syntorus on synths, guitars, bass,



hi-hats and more, and were pleased with how it can make staid sounds stand out in a mix or, conversely, be used to diffuse overly edgy ones. Placing Syntorus before an amp sim plug-in also enabled us to use it as a virtual stomptbox. In fact, with the plethora of options, you can dial in a sound to suit pretty much any instrument.

The high-pass filter is a no-brainer for preserving bass frequencies, while the BBD simulation subdues the treble of the wet signal, which sounds more old school, but also makes the high frequencies less fizzy and the dry signal more defined. We also found that with the LFO sync option on, simple flanger-style swooshing could be achieved with subtly different Offset and Depth values for each path.

If we were to devise a wishlist, we'd like a pan knob per path (handy for fake double tracking effects, with the dry and wet parts panned left and right) and a feedback control for full-on flanger effects. Such wishful thinking aside, though, D16 have pretty much nailed chorus with this gorgeous, flexible plug-in. **cm**

Contact contact@d16.pl
Web www.d16.pl



System requirements

PC 1.5GHz SSE-capable CPU, 512MB RAM, Windows XP/Vista, VST host

Mac 1.7GHz Intel CPU, 512MB RAM, OS X 10.4, AU/VST host

Alternatively

u-he Uhbik
cm139 >> 10/10 >> \$199
Contains a neat chorus/flanger, albeit more in the digital style

Audio Damage Fluid
cm122 >> 9/10 >> \$29
Simpler controls, and thus less flexible, but similarly superb sonics

Verdict

For Splendidly smooth sound
Flexible control set
Built-in tremolo
BBD emulation adds warmth
Adjustable high-pass filter

Against No per-voice panning
No feedback control

Syntorus is one of the sweetest chorus plug-ins out there, and its flexibility means that it's no one-trick pony

9/10

Get your wobble on

Chorus uses an LFO to modulate the length of each path's delay line, and Syntorus' LFOs are pretty capable, providing a fair range of effects. The Rate slider sets the LFO frequency, which can be free running (0-20Hz) or tempo synced to anything from 16 bars down to a 32nd-note, with full, dotted and triplet options.

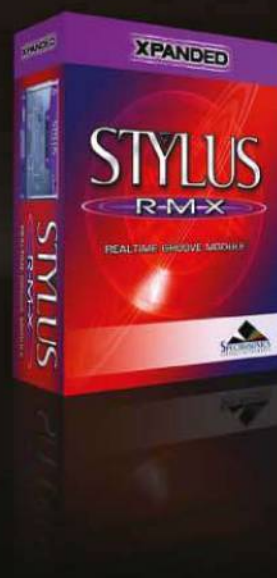
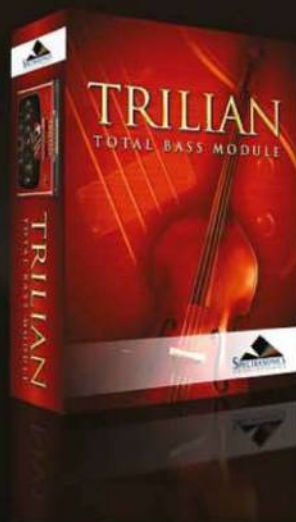
You can pick from one of six LFO waveforms: triangle, square, sine, ramp up, ramp down and random. Unsurprisingly,

triangle and sine are the most usable, giving the smoothest results, but the others can be good for special effects. The Stereo Phase knob adjusts the relative phase of the LFO used to modulate the left and right channels - increasing it gives a wide sound, even when using only one path, while at zero you get a mono chorus, like a guitar pedal.

There's also a switch on the second path for syncing its LFO with that of the first.

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- Includes Software: Prepare Music Pre-gig

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DENON DNS 3700

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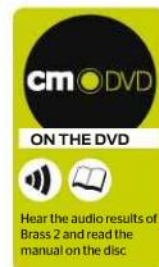
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COMPUTER.MSC.151

Arturia Brass 2 £199

PC MAC



Arturia return with a new incarnation of their innovative plug-in, but can it hold its own in a world full of ROMplers?

> The original version of Arturia's physically-modelled Brass instrument promised a lot but sounded far too synthetic to be of any real use – alas, it was on the receiving end of a dismal 4/10 in **cm97's** review. Four years on, and we have Brass 2 – will it fare any better?

Like v1, Brass includes two modes, Live and Riff, but the former is now four-part multitimbral with a harmonisation feature. Once again, the Riff option includes many programmed MIDI phrases (up to four-part), and being MIDI-based, you can easily modify overall pitch and tempo, change notes in the integrated piano roll editor or drag them into your DAW.

The three instruments (trumpet, trombone and saxophone) can be loaded in solo form or any combination up to the four-instrument limit, and used in sections or up to four-part unison. What's more, the harmonisation options make doubling up octaves or other intervals simple.

Sound manipulation uses eight parameters (see boxout) and the MIDI preset window enables flexible assignment of controllers, with curve type and amount for each. Independently of this, you can draw flexible real-time automation for all parameters other than attack.

Rounding things off is the Specialization page. This is where you level and position each instrument from left to right and near to far, and it includes control over room size and tone.

Rusty trombone

Unlike articulation-based sample libraries, Brass 2 requires that you instead concentrate on translating brass performance techniques. We tested it using a standard MIDI keyboard and this required using all available MIDI controllers (velocity, pitchbend, mod wheel, aftertouch, expression, etc) to get a decent performance. We feel that it worked well for the trumpet, OK for the trombone and not so great for the saxophone. Using a breath controller or a full-on wind controller would no doubt help, but we



suspect that most users will plan to use a regular MIDI keyboard, or program parts in directly.

We were able to generate dynamics, falls, subtle bends and major timbral changes by selecting mutes/mouthpieces. Even so, certain articulations (flutter, for example) eluded us, and it has to be said that the best sample libraries deliver these simply and convincingly. As for combining instruments, we found it best to keep it varied, as stacking the same types of brass sometimes sounded 'phasey'.

The Riff Mode includes almost 200 looped riffs, and the flexibility to change tempo and pitch, or drag them into the DAW, will appeal to programmers. However, the more complex four-part ones took their toll on our CPU meter.

Brass 2 is more suited to performance than programming, and we applaud Arturia for still pursuing the physical modelling dream. Even so, Wallander's WIVI has shown that other synthesis methods can also deliver playable – and more realistic – brass instruments without resorting to massive sample sets or a large CPU hit. **cm**

Contact via website
Web www.arturia.com

System requirements

PC 2GHz dual-core CPU,
512MB RAM, Windows 2000/XP/Vista,
VST/RTAS host or standalone

Mac 2GHz dual-core CPU,
512MB RAM, OS X 10.4,
AU/RTAS/VST host or standalone

Alternatively

Wallander Instruments WIVI 2
N/A >> N/A >> \$399/\$499
Synthetic winds, brass, sax and more, these deliver amazing flexibility and great sound

Chris Hein Horns
N/A >> N/A >> €299+
As sampled horns go, this range offers some of the very best, with numerous bundles available

Verdict

For A big improvement over v1
Good trumpet, reasonable trombone
Slick, clear interface
A performance-orientated instrument

Against Unconvincing saxophone
Requires lots of CPU
Steep learning curve to get best results

Brass 2 is smartly presented and sounds decent, but the Holy Grail of realistic brass simulation remains elusive, alas

6/10

The trumpeter's lips

Brass 2 uses physical modelling, a synthesis technique that breaks down the instrument and the musician into 'components', virtualising them as mathematical models. If designed successfully this approach should enable real-time modification, much like a real instrument, and doesn't require a large database of samples. Research for Brass 2 even involved making an artificial human mouth – this latex creation was used to play a trumpet, so that the developers

could analyse the pressures at play in a trumpeter and trombonist's embouchure.

This translates into eight real-time parameters: attack, pressure, pitch, timbre, noise, vibrato, vibrato frequency and mute (with a dynamic model selected). There's also a Humanization slider for real-time variation to the pressure, noise, vibrato and vibrato frequency. There's clearly lots going on, and getting the most out of Brass 2 requires taking control of these variables.

Best Service Titan €249

PC MAC



Billed as “the most extensive synthesiser sound collection of all time”, can this ROMpler match its quantity with quality?

> Titan is a ROMpler that lives up to its name, featuring 5500 multisampled patches from 200 synths (alas, there's no list of exactly which synths, though). It's powered by Best Service's sample player, Engine, created in partnership with Yellow Tools - see the boxout for more info. Installation is awkward, with three stages, and we had to install the Yellow Tools Key Manager before Titan would run (even though it doesn't use a dongle), which the manual doesn't explain.

Thankfully, the software is easy to use and the patches well organised. The main categories are Synths, Basses, Pads, Voices, Pianos, Organs, Brass, Guitars, Percussion Sounds and Effects, and these are further subdivided. For Synth, there's Bells, Filter, Atmospheric, Leads, Brutal and so on. Pop open the Leads folder and they're further broken down into 18 sub-types!

Strictly old school

Despite the mass of content, there's little from the last decade or so in electronic music - DnB basses, trance supersaws and dubstep wobbles are absent. To be fair, Titan doesn't claim to offer them, but it still seems a missed opportunity.

Within its remit of 70s, 80s and 90s tones, though, Titan is comprehensive. Synths are the main fare, and whether you're after classic analogue, zingin' sync, gritty digital, vintage string synth, punchy wavetable or crystalline FM, you'll no doubt find it if you keep flicking through the patches (which rarely take more than a second to load). Patches respond to the mod wheel and many have been sampled with filter movement, for added authenticity.

The 778 bass sounds are mainly synth-based, but you get 40 of the electric, slap, fretless and upright varieties. Note that the 'real' instruments in Titan are of the 'workstation' variety and thus often unashamedly artificial-sounding. The pads cover both smooth yet juicy analogue and glassy, breathy digital - you even get strings. The Voices folder ranges from singing synths



and vocoders to choirs, while Pianos harbours groovy clavinet, slick Rhodes, workstation grands and electric pianos. The organs are varied, while brass ranges from 80s pop horns to parping synth brass. Guitars are unrealistic, but there are some pleasant plucked efforts; and we liked the percussion section's vibraphones.

Sonically, Titan is very professional, and much care and effort clearly went into making it. While it's not as tweakable as a soft synth, Titan's advantage is that it's sampled from the kind of classic hardware that many of them aspire to sound like. If you play too high up the keyboard, though, you may encounter aliasing, as you leave the patch's 'natural' range (of which no indication is given).

Titan won't dazzle you with reverb-laden one-finger wonders, and it can sound reserved when compared to some ROMplers. However, as a high-quality source of bread-and-butter patches, it fulfils its role admirably, and the Engine interface offers plenty of potential for layering and effecting the sounds yourself. **cm**

Contact mail@bestservice.de
Web www.bestservicetitan.com

System requirements

PC 1.4GHz Pentium/Athlon CPU,
512MB RAM, Windows XP/Vista/7
(32-/64-bit), VST/RTAS host or
standalone

Mac 1GHz G4/G5/Intel CPU,
512MB RAM, OS X 10.4,
AU/VST/RTAS host or standalone

Alternatively

Spectrasonics Omnisphere
cm133 >> 10/10 >> £359

A ROMpler and synth in one, this is a sound design tour de force

reFX Nexus2

cm131 >> 9/10 >> £300

This ROMpler is ideal for dance and has many expansions available

Verdict

For Delivers quantity and quality
Powerful Engine player
Fast loading times
Quick Edit and Pro Edit modes

Against Bothersome installation
Not the most contemporary collection
Occasional aliasing in upper registers
No list of synths used
Pro Edit page's font grates on the eyes

For a massive feast of meat-and-potatoes synth and keyboard sounds, Titan satisfies

Firing up the Engine

Titan would be just a bunch of samples without Engine to tie it all together. With a patch loaded up, you can use the custom Titan Quick Edit page to access the most common controls: high-/low-pass filters, effects levels (reverb, delay, chorus, phaser, flanger), amplitude AHDSR, and more. There's a slider to adjust the sample start position (useful for patches with sampled filter movement) and this can be modulated by velocity or randomised with the Analog I

button (Analog II gives random pitch drift).

Patches (layers) can be stacked to create layered multis, and in the Pro Edit screen you can program detailed modulation and effects setups. There are over 40 effects, and Engine can even host VST effects - you can load VST instruments in as layers, too.

There's a heck of a lot more to it, so check out the manual on the disc. Our only real complaint with Engine is that the Pro Edit screen's angular font is hard to take in.

7/10

cm mini reviews

A rapid-fire round-up of sample libraries, ROMplers and more

Native Instruments

Evolve Mutations 2 €99

Format Kontakt Player Instrument
Contact info@native-instruments.de
Web www.native-instruments.com

Via NI, Heavyocity launch another instalment of their Evolve series. The format is the same as before: you get three percussive Rhythmic Suites (loops mapped to every key so that you can jam out chords to create beats) and 15 tonal ones - these could get you out of a tight spot if composing to a deadline. Percussive Kits offers 11 full sets of slams, whooshes, crunches and glitches, while disturbing textures, FX and stabs are found in Stings & Transitions. Highly usable twisted synths, pianos, guitars, bells and more reside in Tonality & FX - there's even a five-string bass guitar. A neat addition is the Trigger FX system: the notes in one of the upper octaves switches effects in and out, à la NI's The Finger.

Playing through the 2GB of patches takes us right back to experiencing Evolve (cm129, 10/10) for the first time. It's hard not to get inspired by these sounds, lost in playing them or simply amazed by the movie-standard production quality. Intriguingly, many of the percussion and outlandish FX patches respond well to being played chromatically. Overall, this is a collection of highly creative sounds that are at once far-out and bizarre yet addictive and thoroughly palatable.

10/10



Marshall Electronics

MXL USB.009 £349

Format USB 1.1/2.0
Contact MusicTrack, 01767 313447
Web www.mxl-mics.com

This mic from US company Marshall Electronics (not the British guitar amp outfit) combines USB connectivity with a mic pre, zero-latency monitoring and minijack headphone out with level control. Its input converter operates at 44.1, 48 and 96kHz (16-/24-bit), the only slight limitation being that when running at 24-bit/96kHz, you can record but not play back. It comes in a mini flight case, with a 10-foot USB cable, mic clip and stand.

At £349, it's not cheap, but you're getting a large centre-tapped cardioid capsule coupled with an analogue preamp stage - all the elements for recording and monitoring a clean signal. Use of standard USB drivers makes installation simple (Windows users should try ASIO4ALL for better compatibility). Sonically, the mic has a slight lift in the high frequencies and a solid low-end response. It performs well with intimate sound sources such as vocals and acoustic guitar. Whether you're podcasting or just want a single-mic solution, the USB.009 is worth checking out.

8/10



Platinum Samples

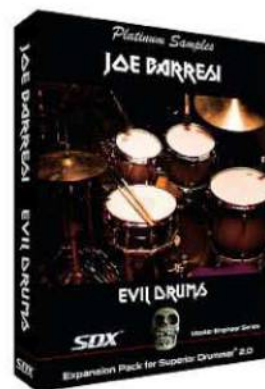
Joe Barresi Evil Drums SDX £149

Format SDX for Superior Drummer 2.0
Contact Time+Space, 01837 55200
Web www.timespace.com

Producer Joe Barresi has worked with such monsters of rock as Judas Priest, Tool, QOTSA and Lost Prophets, and this SDX gives you six kits engineered by the man himself. Unlike Toontrack's over-the-top Metal Foundry SDX (cm142, 9/10), Evil Drums is stripped down: each kit has a kick, three toms (two rack, one floor), hi-hat, ride and two crashes. Kits come from Pork Pie, Ludwig, DW and Gretsch, giving plenty of thud, wallop and punch with no painfully tight snare heads. A Neve console, various outboard goodies and Studer tape recorders were used to capture the kits in two LA studios: Grandmaster Recorders and Sound City.

The mixer setup is dead simple and more like an EZX - for example, the kick mics are pre-mixed down to one channel. Sonically, you feel the drum set resonating as one powerful instrument, with the kick and snare alternately pounding your sensibilities. It's impressive just how good the kits are in their raw state, and they can sound terrific once worked into a mix.

9/10



Native Instruments Abbey Road 60s Drums €99

Format Kontakt Player Instrument
Contact via website
Web www.native-instruments.com

With 6.3GB of compressed content, this pack includes two vintage drum kits (Gretsch and Ludwig) and four snare drums recorded in the world-famous Studio 2. Produced by the studio's in-house team with vintage mics and tracked using 4-track and 8-track tape machines via either the EMI TG or REDD.17 desks, the aim was to reproduce the studio's vintage sound.

With over 29,000 samples, up to 30 velocity layers per sound and up to six alternates per layer, you can expect flexibility and a natural response. In use, you'll find the many snare and hi-hat articulations, such as left, right or alternating hands for snares, help considerably with this. There are even some tom articulations: rim, rimshot and damped 'tea towel' ones, for an authentic 60s recording vibe.

Kontakt's Performance View provides an interface that looks like a typical drum plug-in. There are three pages, drums, mixer and

options, the first for auditioning and editing kit pieces. Controls include tuning, attack, hold and decay, plus individual level sends to overheads and room mics. There's also kick in/out mic balance, snare top/bottom balance and bleed.

You can audition sounds by clicking kit pieces, but they're not velocity-sensitive (ie, based on the position clicked). The Kontakt virtual keyboard is velocity-sensitive, though, and colour-coded to help identify articulations. The mixer page includes level, pan, solo and mute, and each fader includes output routing so you can use Kontakt's mixer for EQ or effects.

Sonically, both kits share a slightly 'muted' sound, rather than the loud brashness of



modern kits, for a convincingly old school thud. You also get overheads in both mono and stereo, and the room sound in stereo. Overall, subtle aspects such as these are what differentiate this instrument from many existing drum ROMplers, and in use, this is what we found most satisfying and desirable about Abbey Road 60s Drums.

9/10

White Noise bleep!Synth £4.99

Format iPhone/iPod touch
Contact contact@bleepsynthapp.com
Web www.bleepsynthapp.com

The first thing that strikes you about this synth is the GUI design. A small button at the top left switches between the configuration pages - pressing it momentarily flips to the next page, dragging it scrolls. There are pages for sound generation, adding motion control, global parameters, live playback and sequencer.

Parameter editing is cleverly arranged to make the most of two-handed input. A virtual scroll wheel on the right fits neatly under your right thumb, while a trigger pad on the left can be used to instantly play the sound. Holding this trigger doesn't sustain the sound for some reason, and there's no way of editing a sound while playing an arpeggio or a sequence.

The three-voice synth engine is great, especially for low-frequency saw-based tones. Its ability to work polyphonically makes it much better suited to gated strings and evolving pads than its competitors, and it includes some excellent routing possibilities for frequency, ring and phase modulation. You can switch between editing the parameters for the two oscillators,

three two-stage envelopes, single filter or comprehensive modulation options. Each set of parameters appear as a list of sliders below the buttons, and while they're easy to modify, the program doesn't seem to recognise more than two touches at a time. If you need more control, you can use the extensive modulation options to manipulate parameters using tilt control or the control envelope in the sequencer.

The 16-step sequencer includes trigger probability and swing, but the note selection would be far more effective if it used the same

hold and drag motion of the mode selector. We'd also like a random mode for arpeggiator. There's no pattern sequencing either, which is a clear indicator that bleep!Synth is intended as a real-time performance partner to its compositional sibling bleep!Box (cm145, 10/10). The highlight of this app is the user-defined matrix of the Play mode. Notes are triggered from a grid of buttons, and when combined with one of the 21 different scales on offer, the output can sound unusual and fantastic.

8/10



Soundware round-up

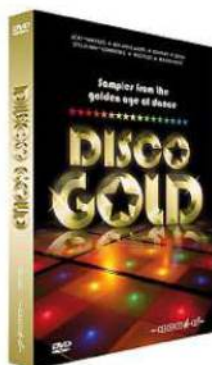
Zero-G Disco Gold £80

Contact Time+Space, 01837 55200
Web www.timespace.com
Format WAV, AIFF, Acid, Apple Loops, EXS24, Kontakt, REX2, NN-XT, RMX

Disco Gold is the follow up to Classic Disco and focuses on the sounds you'd hear in discos from 1977 to 1989. Arranged as 34 construction kits, tempos range from 100 to 125bpm and each kit includes a full mix and a breakdown stem or two, as well as the individual elements.

Great effort has gone into mimicking the sound of famous tracks of the time, with acts such as Chic, Salsoul and Jam & Lewis being influences. For more flexibility, the bonus 'pairs' folders offer pairs of matching phrases for bass, guitar, synth and piano. Brilliant stuff.

9/10



Ian Boddy DOWNLOAD Beatalogue £25

Contact Time+Space, 01837 55200
Web www.timespace.com
Format WAV, Apple Loops, REX2

The fourth release from Ian Boddy's Waveforms series is built from a selection of drum loops at tempos 100, 120 and 140bpm. In typical Boddy style, these are mashed and modified through his array of synths (Roland Series 100-M, VCS3, Harvestman Malgorithm, etc), resulting in 300 mono loops across three categories: treated, twisted and warped.

Typically, the loops combine rich analogue filtering and distortion, and the treatments range from subtle to pretty serious. Overall, we were very impressed by the novel sounds here, and although it's a small pack, its uses should be many.

8/10



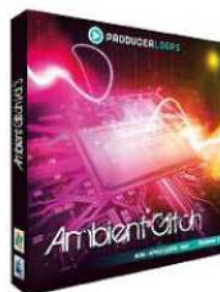
Producer Loops DOWNLOAD Ambient Glitch Vol 3 £15

Contact via website
Web www.producerloops.com
Format WAV, AIFF, Acid, Apple Loops

This latest instalment from sound designer Jeff Rhodes continues down the mangled 'n' processed route established in volumes 1 and 2. Spread across six folders (bass, beats, clanks, percussion, synth and zingers), tempos go from 70 to 180bpm, with loops ranging from one to eight bars.

Although this pack does ambient and glitch very well, we feel that the appeal is far more general. From the tasty reverse zingers (or hits) to the looped synths and beats, if you're after a dash of electronic flavour, there's lots to choose from. Rhodes has also made excellent use of the stereo field in this pack.

8/10



Impact Soundworks DOWNLOAD Shreddage \$49

Contact admin@impactsoundworks.com
Web www.impactsoundworks.com
Format Kontakt 2/3/4

This library focuses on rock and metal rhythm guitar, with raw samples D'd from a guitar tuned to B^b (ie, it's meant for use with an amp sim). Articulations include sustained notes, power chords, pinch harmonics, mutes and slides, with switching accomplished via velocity. The note range goes up to around the first A (fifth fret) on the high E string, which is plenty. The 1GB sample set sounds superb, and with up to eight round-robin alternatives, up and down strokes, and double-tracked patches (using Kontakt's multiple outputs), it can be highly convincing, even with frenetic thrash and death metal picking patterns.

9/10



CFA-Sound DOWNLOAD CableDance €21

Contact info@cfa-sound.com
Web www.cfa-sound.com
Format u-he ACE soundbank

CableDance is one of three new soundsets for u-he's ACE modular synth. It comes from German sound designers CFA-Sound and is a very focused affair, with just 64 patches designed for electro, house and minimal producers. It's divided into basses, drums, effects, sequences and synths.

The vast majority of the patches fall into the bass and synth categories, and range from fat and rounded (CableGuy Bass) to the bright and edgy (SmackSnack Synth). Overall, sounds are very crisp and responsive, demonstrating ACE's architecture well. The only thing lacking is a few more sequence and effects patches.

8/10



Wave Alchemy DOWNLOAD Drum Tools 01 – Minimal Techno & Tech House £40

Contact info@wavealchemy.co.uk
Web www.loopmasters.com/wavealchemy
Format WAV, Battery, Kontakt, HALion, EXS24, NN-XT, SFZ, Live Pack

This is Wave Alchemy's first drum tools library, with over 700MB of raw drum samples (all in 24- and 16-bit format). Inevitably, given its size, this set covers more than just the genres listed, and with 472 kicks, 251 snares and a host of other sounds (glitch, crash, claps, hats, snares and effects), the 1950 samples offer immense choice.

There are also 13 genre-specific kit patches, though none for individual sound types. However, this set sounds brilliant and serves as a fresh, up-to-date library for those making electronic music. **cm**

10/10

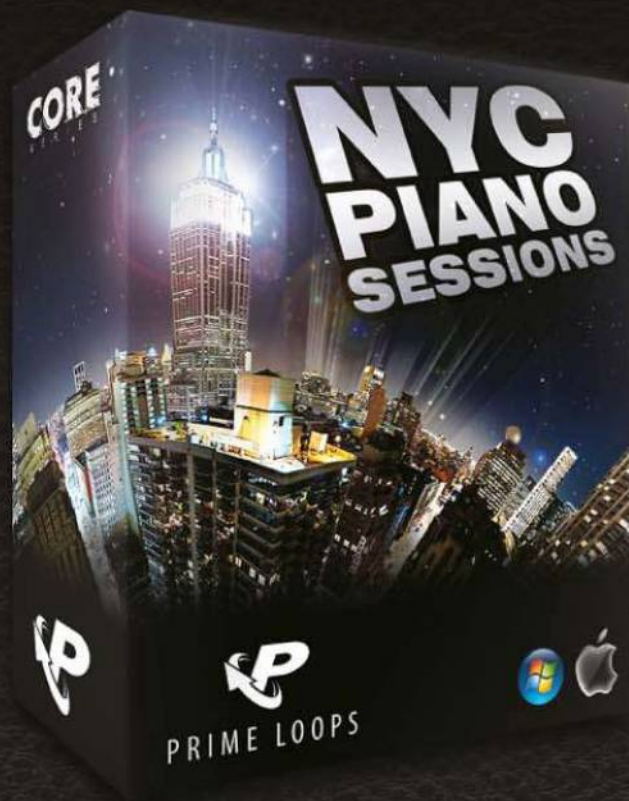




PRIME LOOPS

WE'RE IN THE MIX

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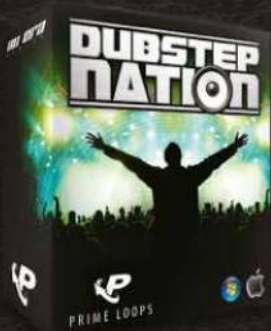
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Shake the foundation! This full-throttle Sample Pack contains over 150 perfectly cut Fidget Vs Electro House Loops, arranged into 11 comprehensive groove kits, broken down into separate Beat Stems, SFX Loops, Synth Hooks, Basslines and Percussion Elements.

£12.95



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Mo'Zart or Beethoven? "Orchestral Scores" delivers 100 professionally mastered Orchestra Loops, String Ensembles, Percussion Elements and a lot more, ready to inject into your mix! Expect an uplifting collection of over 500Mb of crystal clear 24bit audio, nothing less than cinema ready.

£16.95



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15% discount off ALL sample packs
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www.primeloops.com

cm/recommends

The best new gear from the last three issues...



Ableton/Cycling '74 Max for Live €249

Rating 9/10

Reviewed **cm**148

Contact customercare@ableton.com

Web www.ableton.com/maxforlive

What is it? It's Max... for Live! Max is a graphical programming environment that enables you to patch together your own instruments, effects, sequencers and more, and now you can harness this power to create custom devices for Live. The level of integration is highly impressive, with the Live API enabling Max programmers to tinker around with the state of the DAW itself.

Verdict "Max for Live is a monstrously powerful package that will no doubt lead to a deluge of amazing devices."



u-he ACE €69

Rating 10/10

Reviewed **cm**149

Contact urs@u-he.com

Web www.acesynth.com

What is it? A next-level synth from DSP genius Urs Heckmann, this semi-modular monster features an "any cable everywhere" ethos, enabling one to wire up all manner of bonkers patches via an addictive interface. What's more, ACE's price seems to be inversely proportional to its sonic quality: it sounds a million bucks yet costs a relative pittance!

Verdict "This exceptional synth is about as close as software gets to a genuine analogue semi-modular experience. It really is ace!"



Native Instruments Traktor Kontrol X1 £175

Rating 10/10

Reviewed **cm**150

Contact via website

Web www.native-instruments.com

What is it? A controller primarily for use with NI's Traktor software, the X1 has clearly been designed by those who understand the needs of digital DJs. There are no gimmicky platters and nary a fader to be found - instead, you get controls for applying effects, juggling loops and controlling the transport.

Verdict "The X1 is a supremely well designed piece of kit that'll delight Traktor-wielding DJs."

What we've been using this month



Ronan Macdonald
Editor

It's not typical **cm** fare, but Korg's new Wavedrum is the most expressive, playable electronic percussion instrument it's been my pleasure to percuss. We're very much in love.



Lee du-Caine
Deputy Editor

It's said that the devil has all the best tunes, and if Studio Devil's AMP is anything to go by, I'd say he's got some of the hottest, most rockin' amp sims, too.



Tim Cant
Multimedia Editor

I've been unable to take my eyes off the beta of Voxengo's SPAN v2 visualiser lately. With new features like curve smoothing, it really does put the 'anal' back into spectral analysis.



Craig Hitchings
Production Assistant

I haven't touched my axe in months, but IK's AmpliTube 3 has been doing some serious damage to my drum tracks and basslines recently, enabling me to bring the noise in more ways than one.



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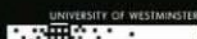
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Back issues

If you've missed an issue of the computer musician's bible, you can get hold of it right here



Issue 150 April 2010

- 1000 Sony Creative Software samples and 1,985 cm techno samples on the DVD
- The beginners' guide to synths
- Unrestricted Axes
- The Low-End Theory
- Producer Masterclass: Super8 & Tab
- NI Traktor Kontrol X1, Audio Damage Tattoo, Steinberg C12 and more reviewed



Issue 149 March 2010

- Nomad Factory MFX-Rack and 2043 Ultimate Sample Toolkit samples on the DVD
- The beginners' guide to audio and sampling
- The Max factor (Max for Live)
- Mid/side mastering
- Producer Masterclass: Foamo
- Magix Samplitude 11 Pro, u-he ACE, Progress Audio Kinisis and more reviewed



Issue 148 February 2010

- Zynwave Podium 2 CM and 1,994 fidget house samples on the DVD
- The beginners' guide to effects
- Instant arrangement (build tracks fast)
- 'Casting the net' (make pro-quality podcasts)
- Producer Masterclass: Subscape
- Celemony Melodyne editor, Ableton/C74 Max for Live, FabFilter Pro-Q and more reviewed



Issue 147 January 2010

- NuGen Audio Stereoizer CM and 2041 vocal samples on the DVD
- Resampling!
- Hardware vs software
- The cm guide to Sonar 8.5
- Producer Masterclass: Shut Up & Dance
- NI Guitar Rig 4 Pro, Spectrasonics Trilian, SSL X-Verb, VSL Vienna Suite and more reviewed



Issue 146 December '09

- Toontrack EZdrummer Lite and 2032 uplifting samples on the DVD
- Mobile music
- Mastering for beginners
- The cm guide to backing tracks
- Producer Masterclass: Phonat
- NI Kontakt 4, PreSonus Studio One, Cakewalk Sonar 8.5, iZotope Alloy and more reviewed



Issue 145 November '09

- Intelligent Devices MegaDelayMassCM and 1954 guitar samples on the DVD
- Vintage sounds (retro studio techniques)
- Into the groove (swing and shuffle explored)
- The cm guide to FL Studio 9
- Producer Masterclass: King Charles
- Novation Launchpad, Image-Line FL Studio 9, NI Absynth 5 and more reviewed

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>Your questions answered

Q&A

Don't know what music software to buy next? Having trouble getting your system up and running? Or are you just desperate to find out how your favourite artist gets that certain sound? Send your questions to cmhelp@futurenet.co.uk

Welcome to Boot Camp

Question I'm trying to install a Windows partition on my Mac, but OS X won't let me create a new partition, even though I've got enough disk space. Is there any way around this?

Ben Lynch

Answer While OS X is excellent at defragmenting itself during day to day use, if you've been working with a lot of big files, you may experience problems when attempting to create a Boot Camp partition. We suggest a program called iDefrag, the demo version of which is at www.coriolis-systems.com. Once you've used this to defragment your hard drive, you should find that you're able to create a

Windows partition, as long as you do indeed have the minimum required space.

In the loop

Question When I took a recording course at my local college, we recorded live drums and split the bass drum, snare and hi-hats on to different tracks to aid panning, processing and so forth. I am now using drum loops a lot in my music and I wondered whether it was normal practice with dance music to beat-slice the loop and put the individual hits on separate tracks, or is it more usual to keep the drum track as a loop on a single track and sit it in the middle of the mix? Or is it just personal choice? Also, are there any DAWs or software that will beat-slice automatically and put the bass, snare, etc, on different channels, or is it usual just to do it all manually? I know you can build up a drum loop with individual hits, but it can be fiddly and time consuming, and I wondered whether there was an easier way?

Tony Murray

Answer When it comes to making modern dance music, getting a full-sounding mix is of the utmost importance, and the vast majority of pro producers will at some point use single hits, whether they're one-shots or sounds chopped from loops. This gives you much more flexibility when it comes to processing and arranging, but it's not always necessary. Drum 'n' bass producers, who arguably create some of the most sophisticated beats around, usually start with single hits and layer multiple loops over the top, processing everything to sit together seamlessly.

It's unusual for breakbeats to be split over different tracks, although jump-up producer TC, for example, goes to great lengths to process each slice of his breaks individually in order to get them sounding as fat and flowing as possible.

Although some DAWs, such as Logic and Cubase, include tools that enable you to detect the individual hits in a drum track, they're really intended for use with full recordings of live drummers rather than short loops. In such cases, the easiest course of action is, if necessary, to chop the loops yourself and move the various elements on to other tracks as you see fit. This might seem fiddly at first, but with a little bit of practice, you'll be slicing up loops with minimal hassle.

Programming great-sounding beats is one of the most crucial elements of dance music production, and while it might seem like a lot of effort, proper attention paid at the early stages will inevitably pay off in the long run.

Intensive care

Question I'm involved with hospital radio and am looking for a piece of software that we can use to process voices and mix in musical beds. One suggestion we have had is Adobe Audition. Are there other options worth considering that are user-friendly and quite versatile?

Dave Thomas

Answer Adobe Audition 3 is indeed a fine piece of software for this kind of work, the only catch being its £326 price tag. While it's definitely worth considering, you should also take a look at the various other DAWs and audio editors on the market, too, especially if you want to save yourself some money. You should definitely give the excellent freeware multitrack audio editor Audacity a try - it can be downloaded from audacity.sourceforge.net - this includes a great deal of the functionality provided by commercial audio editors and would certainly do the job. Audacity is compatible with many of the freeware VST plug-ins available on the internet, and the various VST effects found in the CM Studio, too.

Another alternative is Sony's Sound Forge Audio Studio, a mid-priced package that'll only set you back £45. This cut-down version of Sound Forge Pro includes a greater selection of effects and editing tools than Audacity, and, most importantly, won't break the bank.

COMPUTER music QUESTION OF THE MONTH

The writer of our *Question of the Month* will receive their choice of two Artist Series sample libraries courtesy of Loopmasters. www.loopmasters.com





M-Audio's Fast Track Ultra features a wealth of input/output options for such a small and inexpensive unit

Making connections

Question In my current tracks, I just use software and samples, as I have no interface. I own a microKorg synth, as well as a guitar and bass, and I'm thinking about getting a Kaossilator, as it's such a unique synth.

Therefore, I'm looking at getting a USB audio interface to hook everything up, and I'd like it to have at least one MIDI I/O, maybe more, in case I get more MIDI hardware, and some line inputs, too. I have looked at the Tascam US-122mkII, but this has two XLR mic inputs and I'd rather not buy kit with features I don't need, because I don't have that much to spend. What interface would you recommend?

Matthew Howell

Answer Unless you're planning on using more than 16 MIDI channels, you're not really going to need an interface with more than one output: most MIDI gear (including the microKorg) has a MIDI Thru port, which enables you to continue the MIDI data's journey from your computer to other equipment. Plus, if you do end up investing in any other MIDI kit, you can always invest in a separate MIDI interface.

As such, getting a decent number of inputs should be your main priority. If you are indeed going to purchase a Kaossilator, then you'll need two sets of stereo jack inputs for that and the microKorg, plus you'd ideally look to be future-proof to a certain extent, in case you decide to buy more kit. Unfortunately, once you go beyond two sets of stereo inputs, audio interfaces start to get a little pricey. Bearing in mind that you'd rather not spend any more money than strictly necessary, we'd suggest something along the lines of the M-Audio Fast

Track Ultra. This USB interface features four sets of stereo jack inputs, MIDI in and out, and can be picked up online for a little over £200. While it might be more expensive than the Tascam, which only has one set of stereo jack inputs, you're actually getting plenty more interface for your money with the M-Audio model.

Audacious request

Question I use Audacity all the time and it would be really convenient to save MP3s directly from it, rather than using iTunes or Windows Media Player. I know it's possible, but I can't work out how. Can you help?

Declan Ross

Answer Due to software patents, Audacity isn't allowed to be distributed with an MP3 encoder. However, you can download the free LAME MP3 encoder (lame.buanzo.com.ar). For instructions on how to install it and export MP3s from Audacity, see *Using Audacity and LAME to encode MP3s* on this very page.

New York, New York

Question How can I do parallel style compression in Ableton Live? There doesn't seem to be a plug-in designed to do this - will I have to use a third-party VST?

Paul Clement

Answer Parallel compression (aka, New York compression) is a useful technique for getting a squashed, pumping sound, while still retaining some of the original transients. It is indeed possible to do this in Ableton Live using the

> Step by step

Using Audacity and LAME to encode MP3s

For Audacity on Windows:
[Lame v3.98.2 for Audacity on Windows.exe](http://lame.v3.98.2.for.Audacity.on.Windows.exe)
 Please support this download server. Any donation is HIGHLY appreciated (NOT required to download lame, lame is free).

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ZIP OPTION:
lame.v3.98.2.zip (Issues? Some help [HERE](#))

FFmpeg Binary for Windows (THIS IS NOT LAME!):
FFmpeg.2009.01.05.for.Audacity.on.Windows.exe

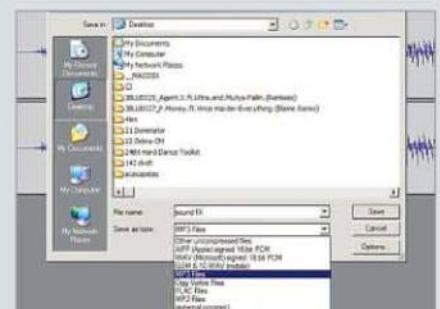
For Audacity 1.3.3 or later on Mac OS X (Intel or PPC), or Audacity 1.2.5 on Mac OS X (Intel):
[Lame.LLibrary.v3.98.2 for Audacity on OSX.dmg](http://lame.LLibrary.v3.98.2.for.Audacity.on.OSX.dmg)

FFmpeg Binary for the MAC (THIS IS NOT LAME!):
FFmpeg.2008.12.11.OSX.DMG

1 > Start by downloading the correct version of LAME for your platform from lame.buanzo.com.ar. PC users should download **Lame v3.98.2 for Audacity on Windows.exe**. Mac users should download **Lame Library v3.98.2 for Audacity on OSX.dmg**, or **LameLib-Carbon.sit** if they're running Audacity 1.26 on an old PowerPC processor machine.



2 > Windows users can run the EXE file, which will install the files in **C:\Program Files\LAME for Audacity**. Mac users can run the disc image and copy the **libmp3lame.dylib** file to **/usr/local/lib/audacity**, or use Stuffit expander to extract the contents of the SIT file, which can be saved anywhere.

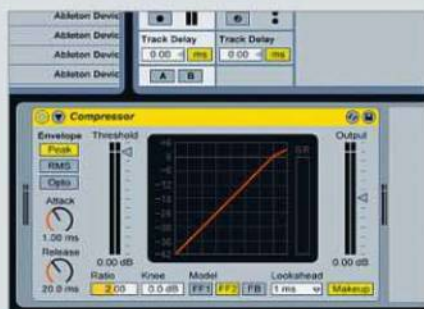


3 > Run Audacity, open your project and select **Export**. Set the **Save As Type** field to **MP3 Files**, and click the **Save** button. Audacity will ask for the location of the LAME file. Navigate to it (refer to the previous step if you can't remember where you stored it), then click the **OK** button. Now you can export MP3s with ease!

"Parallel compression (aka New York compression) is a useful technique for getting a squashed, pumping sound while still retaining the original transients"

> Step by step

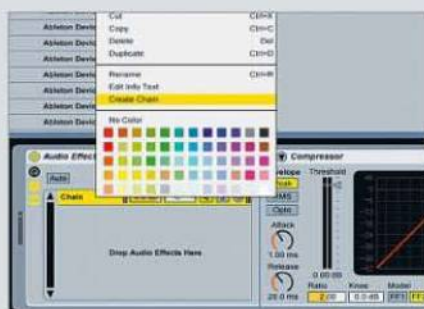
Parallel compression in Ableton Live



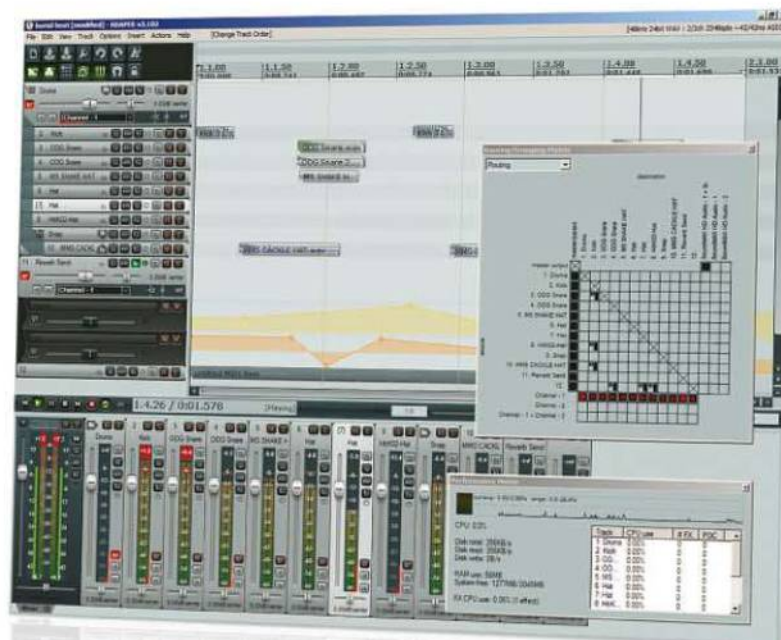
- 1 > Start by loading the audio you want to compress onto an audio track in Live. Drag the Compressor effect from the Live Devices browser onto the track - you'll see it appear at the bottom of the screen in the device chain.



- 2 > We're going to use an Audio Effects Rack to create a parallel compression effect. To do this, right-click the Compressor you just created and select **Group**. An Audio Effects Rack will be created around it. Click the **Show/Hide Chain List** button to display the entire effects chain.



- 3 > Right-click below the existing chain and select **Create Chain**. You now have two effects chains - one with a compressor on it, one without. Turn down both chains to stop the channel overloading, then apply the desired compression level using the Compressor on the first chain.



Not only is Cockos Incorporated's Reaper 3 great for audio, it can import a variety of movie files, too

native effects. See our tutorial *Parallel compression in Ableton Live* for a guide.

Music video

Question A friend of mine is making a video for a college project and has asked me to compose some music that works with it. This is going to be written from scratch especially for the video, and I would ideally like to be able to watch the video in the software I'm using to make the music. I know this is possible with high-end DAW software like Steinberg Nuendo, but are there any cheaper programs that will let me run a video alongside the sequencer?

Karen Stringer

Answer These days, many DAW applications (including Live, Logic and Cubase) feature the ability to playback video files as part of a project. If you want something a little cheaper, may we suggest Cockos Incorporated's Reaper, which is an excellent shareware DAW with tons of features, customisation options and the very reasonable price tag of \$60 for a discounted license that covers you for non-commercial usage, plus commercial usage as long as you aren't making a yearly income of more than \$20,000. It's also PC- and Mac-compatible and extremely resource-efficient, meaning it should run smoothly on pretty much any machine. You can learn about Reaper's most useful features in our guide beginning on p76.

To use a video file in Reaper, just drag it into the arrangement window, where it'll be added to

the project like any other media file. A video window will appear alongside the rest of the track. Reaper works with all the major formats, including AVI, MPG, WMV and MOV files, so you should find that it suits your needs.

Silent running

Question I have spent a while building up my ideal studio setup and making my room sound decent, but there's still a problem: my computer makes noise that can be detected on the vocal recordings I make. What can I do to make my PC quieter without spending tons of money on a new 'silent' machine?

Nathan Dick

Most computer noise issues are to do with ventilation, and it's likely that the power supply and/or CPU fan are to blame for your noisy PC. You could try cleaning these, but do be extremely careful when working inside your computer and handling anything within your PC's case. Be sure to follow any maintenance or cleaning instructions provided by the manufacturer, and don't touch anything in there unnecessarily - human skin contains oils that can damage chips and other computer components. Careful use of compressed air cleaners can be a good way to get your PC's guts clean, although it's best to disconnect the CPU fan before cleaning it. This can be quite a chore, however, and you may need to apply some thermal paste before re-attaching it. An alternative to compressed air is to use a damp cotton bud, but be very careful not to leave any

"If you want something a little cheaper, may we suggest Cockos Incorporated's Reaper, an excellent shareware DAW"

cotton inside the machine, and check that the fan is completely dry before turning it back on. Your CPU's fan may have manual speed controls, and turning it down might make it quieter – the only catch being that it might also impede your computer's ability to cool itself, leading to potentially serious damage.

Once you're done, ensure that everything inside the case is fixed securely, and that nothing obstructs any fans or the flow of air through the system. When you close the case, make sure it's securely fastened and that any ventilation slots have clearance to 'breathe'.

If that doesn't help, you may find that the best way to improve the situation is to buy a new, quieter CPU fan or power supply. Another alternative is to physically damp the noise created using something like a towel, although if you go down this route, you need to be very sure that you aren't covering any of the machine's ventilation outlets.

Computer components are delicate and sensitive to the oils secreted by human skin, so be careful fiddling about inside



Question

How do I make my own multisamples with UVI Workstation?

Michael Herron



1 > You can only load one sample into an instrument slot in UVI Workstation (www.uvisoundsource.com), but you can use several slots to create your own multisampled patches, although you'll have to set the tuning, amplitude, FX and filter settings of each slot individually. Copy the **Tutorial Files/Q&A/UVI Multi** folder from the **cm** DVD to your hard drive.



2 > Load the UVI Workstation instrument in your DAW and double-click where it says **Empty** on the first instrument slot. A browser will appear at the bottom of the window – use it to navigate to the location of the UVI Multi, and double-click the **Beat 124 BPM.wav** sample to load it into the first slot. Click **OK** to exit the browser.



3 > UVI Workstation will automatically map the sample across the keyboard, and play it back on every key at the original speed, regardless of the project tempo. You can turn off this timestretching by selecting the **Loop** tab and changing the mode from **Stretch** to **Sample**.



4 > If you're using a rhythmic sample and want it to play back in time with the project tempo, choose **Stretch** mode and select the sample's original tempo in the **Tempo** field by dragging it to the desired value – hold **Ctrl/Cmd** for fine adjustment. In this case, we've set it to **124bpm**.



5 > Click the **Expert** icon at the top of the interface. This brings up the key and velocity settings for each instrument slot. Click the small square to the left of the **Lowkey** and **Highkey** values to activate them, and set both to **C3**, as we have here. This sample will now only play back on C3.



6 > To play another sound on the same MIDI channel, change the A2 value on the second slot to **A1**, and load one of the other loops in the **UVI Multi** folder by clicking **Empty** and using the browser as before. Activate the low and high note boxes and set them to **D3**. Click the **Add** button for more slots and **Save** in the **Default Multi** bar to store your patch.

Native alternatives

Question I'd really like to give FM synthesis a try, but I can't afford FM8, which at €179, is too much at the moment. Do you have any other suggestions or recommendations?

John Borg

Answer If you've yet to use a FM synth, it's worth downloading the FM8 demo just to see what you're getting yourself into! Other notable FM synths include Image-Line's Toxic Biohazard (\$99 from www.image-line.com) and LinPlug's Octopus (€99 from www.linplug.com), both of which have downloadable demos. On the freeware front, Crystal features some basic FM functionality - you can find it in the library section of the **Software** folder on the **cm** DVD, or download it from www.greenoak.com.



If you want basic FM functionality for free, look no further than Green Oak's Crystal synth

Question How do I make hard, DJ Hazard-style bass sounds with Native Instruments Massive?

Ian Cooper



1 > Massive is the ideal synth for creating dirty, distorted DJ Hazard-style bass noises. This is because its complex wavetable oscillators can create interesting harmonic movement, and it's got nice chunky filters to boot. Load up the synth and you'll be presented with the default patch. Start by changing the first oscillator's wavetable to **Escalation I**.

2 > Hazard bass sounds have a lot of movement, so we'll use one of Massive's envelopes to get the same effect. Select **1 Env** in the centre window, and set the **Attack** and **Decay** time to around 11 o'clock, as we have here. Also, turn the **Decay Level** all the way down. This gives us a quick up and down movement that's perfect for getting a dynamic bass sound.

3 > Drag the modulation handle from 1 Env onto the first modulation slot under the **Wt-position** knob. Turn the **Wt-position** knob all the way down, then drag the first modulation slot to set the modulation amount to maximum, as we have here. Now when you play a note, you'll hear the movement this creates.



4 > Copy the settings we've used to oscillators one and two, which both use the default Square-Saw I shape. The oscillators being on different octaves give us quite a rich synth texture, but it needs some filter movement to get that authentic DnB sound.

5 > Activate the first filter and set it to **Lowpass 4**. Set the filter **Cutoff** to about ten o'clock, and assign 1 Env to the first filter modulation slot. Use the same level of modulation that we have here, and set the **Resonance** between eight and nine o'clock.

6 > Our sound is still a little weedy, so we need to add our secret ingredient - a bit of clipping. Activate **Insert 1** and set it to **Hardclipper** mode. With the **Dry/Wet** level set to 100% wet, set the **Drive** level to around 11 o'clock and there you have it! You'll find the finished patch in the **Tutorial Files/Q&A** folder on the **cm** DVD.

Question How do I create the chord and stab sounds from Wippenberg's track *Pong*?

John Cotter



1 > The chord sound from *Pong* is actually very easy to replicate. You can use pretty much any virtual analogue synth to do it, and we're opting for ZebraCM here, which you'll find in the **CM Studio** folder on the **cm** DVD. If you haven't done so already, install the synth and load it up in your DAW. The default **UH Initialise** preset is already pretty close to the finished sound that we need.

2 > Start by turning the **Cutoff** knob in the filter section all the way up, as - unusually - we don't need to use the synth's filters at all for this sound. We also want the sound to maintain a consistent volume, so turn the **Sustain** level up on the top envelope.

3 > Both oscillators are set to sawtooth waveshapes by default, and that's ideal for the sound we're creating, so we don't need to change these at all. However, we do need to **Tune** the second oscillator up 7 semitones, so that the synth plays a fifth chord.



4 > Two sawtooth waves tuned a fifth apart is all you really need to create the chord sound, but if you're aiming to replicate the track's vintage feel exactly, you should turn up ZebraCM's noise oscillators very slightly, and roll off some of the top and bottom end with the noise section's **Filters**, as shown here.

5 > The blippy stab noise is also a relatively simple virtual analogue tone. Having said that, it takes considerably more fine-tuning than the chord. Starting with the default **UH Initialise** patch, **Tune** the second oscillator up 5 semitones to create a perfect fourth.

6 > Let's turn our attention to the envelopes. Set the **Sustain** level in the top envelope to maximum. In the bottom envelope, as shown, set the **Decay** to 20 and the **Sustain** to 15. This gives us a very short and punchy filter movement.



7 > Turn the **Cutoff** up to 40 and set **Env2** to 70. This gives us a slightly more subtle filter cutoff effect than that of the default patch. When you play or sequence this patch, you're going to want to use very short notes.

8 > To make our patch sound less 'dry', activate the Chorus and Delay effects. Double-click the **ModFX1** and **Delay1FX** blocks in the FX routing panel at the bottom left hand corner. If you go the whole hog and activate the reverb, too, you'll want to turn the **Wet** level down to 14 or so, to keep the ambience subtle.

POWER TIP

>Sidechain shenanigans

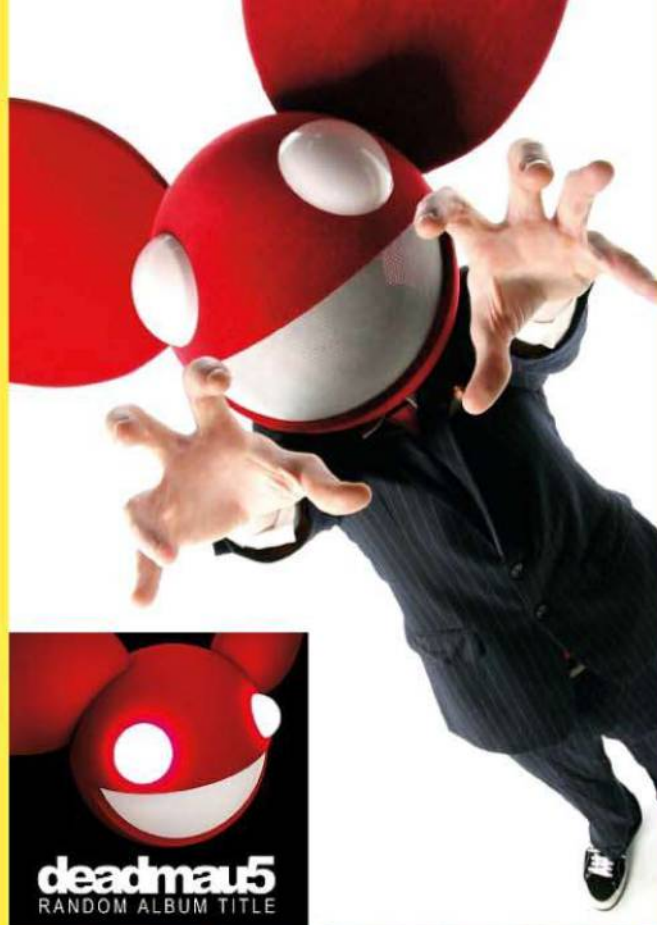
In the breakdown of *Pong*, you'll hear a familiar, house-like pumping effect on the chord part. This is created by placing a compressor on the chord with a kick drum track routed to its sidechain input, causing the chord to duck in volume on every beat. To get this effect on a breakdown when no kick drum is present, use a duplicate of the kick that's not routed to the master output. This won't be heard in the mix, but will cause the sidechain compression effect to be triggered. **cm**

NEO TRANCE

Blending minimal techno and trance influences to generate dark, melodic themes, we show how to create the most idiomatc elements of this very modern and increasingly popular style



Hear our various neo trance track elements in the Tutorial Files folder



© Bodzine/Bergtho - Engi

> Back in the early 2000s, a marked shift began to occur in dance music. A reaction to the trend of the mid and late 90s, which had seen most genres moving towards heavier basslines, huge drum sounds and excessive brickwall limiting, many producers started moving back towards a more minimal aesthetic. Taking elements from minimal techno, glitch and experimental music to the club house sound, micro (aka, minimal) house was born.

In stark contrast to the distorted, heavily compressed bass drums that had dominated house and club music for years, micro house opted for much smaller, more percussive sounds. In addition, the lengthy vocal sections of house were often replaced with incredibly short snippets - often from obscure sources like long wave radio - in a technique called 'micro sampling.'

This shift towards all things micro wasn't just limited to house music, though. While the minimal trend slowly began to influence other genres, like DnB and breaks, it was trance music that was perhaps most resilient to change. As many minimal techno and tech house producers started adding longer, more trance-like melodies, and more and more trance producers started stripping down and refining their mixes, a whole new genre emerged: neo trance.

The neo trance sound sits halfway between trance and techno. It's generally darker and less euphoric than club trance, yet it tends to be more melodic than techno, and, more often than not, it maintains trance's familiar

"It's generally darker and less euphoric than club trance"

arrangements and breakdowns.

Germany has been home to many of the pioneering artists in the genre, such as Dominik Eulberg, Stephan Bodzin and Extrawelt. Today there is considerable crossover (and some would say confusion) between neo trance and genres such as progressive house, tech house and minimal techno, with popular global artists taking regular excursions into neo trance territory including, among others, Deadmau5, Trentemøller, Nathan Fake and James Holden.

So, history lesson over, let's show create the defining elements of a neo trance track.

> Step by step Building a drum track



1 > We're going to start off with a standard 4/4 bass drum pattern. We'll be giving each of our drum sounds its own MIDI channel and Impulse sampler - this is to make it easier to adjust levels and apply additional processing, should we need it. We've provided a suitable kick drum for you in the **Tutorial Files»Focus** folder.



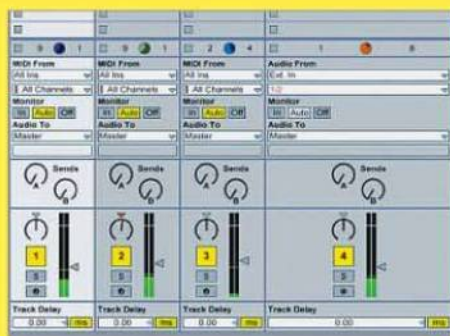
2 > A short shaker sample or closed hi-hat will emphasise the upbeats and push things along. Again, load a suitable sample into a sampler and adjust the high-pass filter and decay if necessary. For this example, as with the kick drum, we just need to ensure Live's Impulse sampler is in **Gate** mode, so we get a full sounding hit.



3 > Next, let's add some percussion. A conga loop can help provide extra energy and movement to a drum beat. We've included three standard conga hits in the tutorial files on the disc. Load each of them into a fresh instance of Impulse and create a standard conga pattern, as shown above.



4 > One of the best ways to add movement to a drum beat is to mix a percussion or drum loop in at a low level. We're using five exclusive percussion loops designed for us by the legendary Vengeance-Sound. Here we're using the 128bpm **Vengeance Minimal CM Loop 3. wav** on a new Audio channel.



5 > Now we need to check out mix levels. It's generally a safe bet to ensure our mixer channels aren't peaking above half-way up their respective VU meters. In this example, our kick, hi-hat and congas can peak at about the same level, while the percussion loop can sit a little lower in the mix.



6 > Putting a limiter or compressor across the master outputs at this stage has become popular among dance music producers in recent times. Some say it approximates the feel of mixing on an old analogue desk. Here we're using Sonnox Oxford Limiter with some light limiting and a little enhancement.

Kicking back

The kick is the backbone and force behind most trance, house and techno tunes, yet many producers are unaware of how to process, manipulate and create kicks, instead relying solely on samples.

Increasingly, not only does the kick define the style, character and pace of a tune, with generally longer decays, but it often defines the key a tune is written in, too.

At its simplest, a kick is merely a pitch-swept sine wave. That is, it's a sine wave that starts off at a very high pitch and drops down to a low pitch very quickly, creating the characteristic pop or thud effect. This is how the famous Roland TR-909 and TR-808 kicks are generated. It's also common to layer synthesised kicks made this way with short attack samples from real bass drums or vintage drum machines to add character.

The modern electro house and neo trance kicks, used famously by artists such as Deadmau5, tend to sustain the decay much longer than normal, making the kick into more of a bassline and often replacing the need for any additional synth bass in the mix. These are made by layering a very short bass drum sample with a straightforward sine wave from a synth or sampler.

Tuning the bass drum sample and sine wave relative to each other can result in a wide variety of different phasing effects, giving you an equally wide variety of different sounding kicks that you can obtain from a single sample.

You may choose to use volume envelopes or even sidechain compression on the sine wave to minimise these effects. One of the most useful plug-ins around for any work like this is Smart Electronix s(M)exoscope (bram.smartelectronix.com/scope_docs), which enables you to view your waveforms and track any phasing issues in real time.

Many synthesised or layered bass drums also benefit from a degree of soft-clipping, saturation or distortion. This helps to tame any wild dynamics created by phasing around the attack portion, and also adds warmth and presence to the sine wave. Digitalfishphones' Blockfish compressor is excellent for squashing things together without sacrificing energy or impact - its tunable saturation control can add harmonics and grit to clean sounding sine waves, too. Also, sometimes it's worth simply driving a mixer channel in your DAW or sampler into the red, as this can give you a more aggressive, hard-clipped kick sound.

> Step by step Making a neo trance synth pad



1 > To create a simple and versatile trance pad, we're going to use DiscoDSP's Discovery V2 soft synth. Modelled on the famous Nord Lead, this has a colourful, well defined sound that easily cuts through most mixes. We'll start off with preset 62: **FatSawBrass**.

2 > First, tune Osc2 up **7 Semitones**. Turn the **Sustain** all the way up in the Amplifier section, set the **Release** to about 2 o'clock, and turn the **Attack** all the way down. Switch the **Delay** off and ensure you have Chorus (**CHR**) activated.

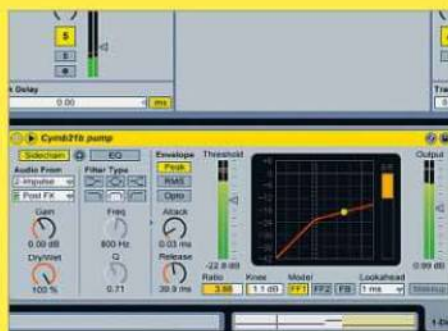
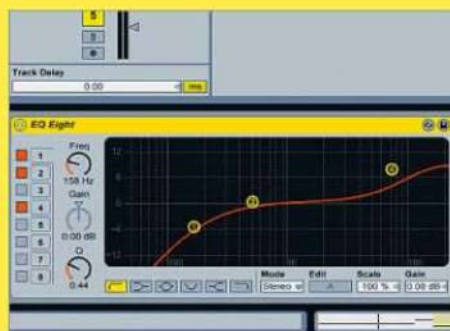
3 > Turn the **Attack** in the Filter section down, set the **Decay** to between 10 and 11 o'clock, turn the **Sustain** down to about 8 or 9 o'clock and stick the **Release** at maximum. Set the **Filter Frequency** to between 10 and 11 o'clock and the **Resonance** to about 7 or 8 o'clock. Also, set the **Envelope Amount** in the Filter section to 11 o'clock.



4 > Many contemporary dance tunes rely on big repetitive chord sequences played staccato. These often use parallel voicings, which means the gaps between the notes in each chord don't change as they move up and down. To make this easy, we're going to use the Chord plug-in from Live's MIDI Effects. Select tunings of **+7** and **+14**.

5 > For the staccato effect, we're going to use Live's Arpeggiator plug-in. Select the **Chord Trigger Style**. Set the **Rate** to **1/16** and the **Gate** to **50%**. Set **Retrigger** to **Beat** mode. Doing it this way means we can play these sequences using only one finger. It also means we can adjust things like Gate times and chord notes without having to fiddle with the MIDI data.

6 > Now we can experiment with simple chord sequences, moving up and down the keyboard and changing chord notes if desired. For now, let's record a simple four-bar sequence. If you're more musically inclined, you may decide to play the chord notes in yourself, in which case you can switch off the Chord plug-in.



7 > This chord sequence will probably have a lot of low frequencies, so now we can add an EQ plug-in with a low frequency roll-off at around **150Hz**. We can also boost the high frequencies with a high shelving filter, to help the synth cut through the mix. Add about **8dB** at **8kHz**.

8 > Another key to this sound is the ducking effect our kick is going to have on it. This is achieved via a sidechain compressor. Select a Compressor plug-in and expand it with the arrow button at the top left. Here you can set the kick track to control the compressor in the **Audio From** box.

9 > We finish this off with a bit of echo. Select the **Pong** preset from Live's Ping Pong Delay plug-in. As we don't need too much echo here, we can turn the **Feedback** down to **41%** and the **Dry/Wet** down to about **23%**. We can also turn the delay up to **4**, so that the echoes all fall on the beat.

> Step by step

Making a bassline



1 > We can add a bassline to our sequence easily by duplicating the channel containing our Discovery V2 chords, then changing a few of the settings. First, open up Discovery in the duplicated channel and turn the Chorus (CHR) off. This is so our synth chords sit fairly wide in the mix while our bass sits in the middle.



2 > Next we add a Pitch plug-in from Live's MIDI effects, tuned down to **-12 semitones**. We won't need chords in the low-end, so switch the Chord plug-in off in this channel, and do likewise with the Ping Pong delay. We can also tone down the sidechain compression effect by reducing the **Release** time to about **39ms**.



3 > On the EQ, take the high shelving filter off and cut everything below **80Hz**. Change the **Q** to about **1.18**, so we get a small boost in this region, too, just as we have here. We can now copy the sequence straight from our chords track and insert it here. Setting both channels to monitor **In** enables us to play back the chords and bass in unison.

> Step by step

Adding track dynamics



1 > Now to make a simple arrangement. You can copy ours, as shown above and on the DVD (**Neo trance arrangement.jpg**). You'll notice that we've got four bars of just the synth lines, conga sequence and percussion loop, followed by four bars with the kick and hi-hat playing as well.



2 > Load a cymbal onto a fresh Audio channel and **Reverse** it. We can trim the end point, so that the cymbal cuts off abruptly. Now set the reversed cymbal in such a way that it ends precisely on the downbeat at 4.3 - ie, two beats before the kick comes in. Add a Ping Pong delay to the cymbal to give it a rhythmic quality.



3 > We can also emphasise the downbeat when our kick comes in with some filtered noise. We're using Discovery V2 again with a simple noise sound, with the **Colour** set to **54.8**, but a sample would do just as well. We can also add a sidechain compressor for some added bounce, and ping-pong delay for extra interest.

Recommended listening

Nathan Fake

THE SKY WAS PINK (JAMES HOLDEN REMIX)

This track was apparently named after a heavy night in which Nathan Fake spent a little too long dancing in a green tent. Upon stepping outside, with his eyes so used to the green, the sky appeared pink. The James Holden remix of this track became an instant classic, and is considered by many to represent the birth of neo trance.



Trentemøller

MISS YOU (TRENTEMØLLER REMIX)

Trentemøller's *The Last Resort* album came along at the height of the emerging neo trance, minimal and tech house sounds, and manages to fuse many elements from these genres into an almost cinematic post-club soundtrack.



Deadmau5 & Kaskade

I REMEMBER

Joel Zimmerman (aka, Deadmau5) has been one of the leading lights in neo trance since he exploded onto dance music scene a few years ago. Although everything he does seems to span several genres, the melodic synth chords and vocals in *I Remember* make it an unmistakably neo trance Deadmau5 outing.



Minilogue

THE LEOPARD (EXTRAWELT REMIX)

Extrawelt's remix of *The Leopard* is a masterpiece of minimal trance/techno production. With its soft, low-key drums, brooding, almost sinister lead synth line, and restrained yet compelling arrangement, this track is unmistakably German, and an enduring classic.



> Step by step Creating a reverb swell



1 > As neo trance arrangements tend to be fairly sparse, a lot of what we do to maintain the listener's attention will involve the use of automated effects. Head to the **A Return** channel and insert a Ping Pong delay.

2 > We want this delay to create a cascading effect, so turn the **Feedback** up to **67%** and the **Dry/Wet** mix to **50%**. We can now send percussion tracks to this delay - by automating **Send A** on the appropriate channel - to add subtle variations to arrangements.

3 > Go to the **B Return** channel and insert the **Cathedral** preset from the **Hall Reverb** folder. We're going to use this channel for a big, swelling reverb, which we can send tracks to.



4 > For a rising ambience effect that we can control by automating the **Send A** dial on each channel, route the Delay channel so that it feeds into the Reverb. Select **Enable All Sends** by right-clicking the **Send** dial in **A Return**. Turn **Send B** all the way up on the A Return channel.

5 > Another way to automate this effect is to keep the percussion track routed to Send A, then control the volume of the delay and reverb channels instead. This enables us to fade the effect in, but also to cut it off sharply when required. Automate the volume of the **B Return** channel and select **Sends Only** in the **Audio To** box on the **A Return** track.

6 > Many producers these days like to get the backbones of their arrangements down by performing and recording the mix live, usually using MIDI controllers set to control clip triggering, track and send levels, synth parameters and effects. Why not have a go at this type of arrangement yourself, then fine-tune things manually?

Recommended neo trance software



DiscoDSP Discovery

It's almost rare to find a house or trance producer who doesn't have a Clavia Nord Lead synthesiser somewhere in their arsenal. With a sublime and versatile sound that bridges the gap between analog warmth and digital precision, DiscoDSP's Discovery is the closest thing you can get to a Nord Lead in plug-in form.



Vengeance Sound sample packs

Vengeance's range of mostly house-oriented sample packs have become so popular among dance music producers that the company's name has actually become an adjective on music production forums. Although these samples can sometimes be used lazily, it's only a testament to their very high quality, versatility and usability.



Sonnox Oxford plug-ins

Sonnox's range of high quality Oxford plug-ins are ideal for putting the finishing touches to your more minimal mixes, where smoothness and transparency are extremely desirable. Sonnox's Oxford Dynamics and Oxford Limiter plug-ins offer similar functionality to units by the likes of Waves, but generally offer a warmer, less clinical sound.



FXpansion Guru

Guru is a superbly designed and implemented drum sampler, beatbox and loop mangler, which can be used either as a standalone app (to get loops and ideas down quickly) or as a plug-in within your DAW. It ships with a 2GB library of high-quality and extremely versatile samples from the likes of Deadmau5, Goldbaby and Groove Criminals. **cm**

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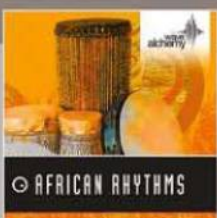
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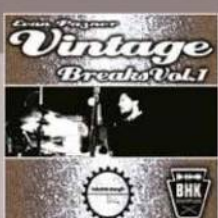
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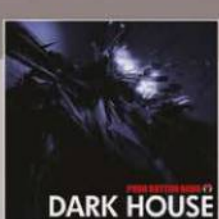
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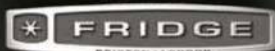
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